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INTERNATIONAL CONGRESS OF ARTS & SCIENCE

EDITED BY

HOWARD J. ROGERS, A.M., LL.D.

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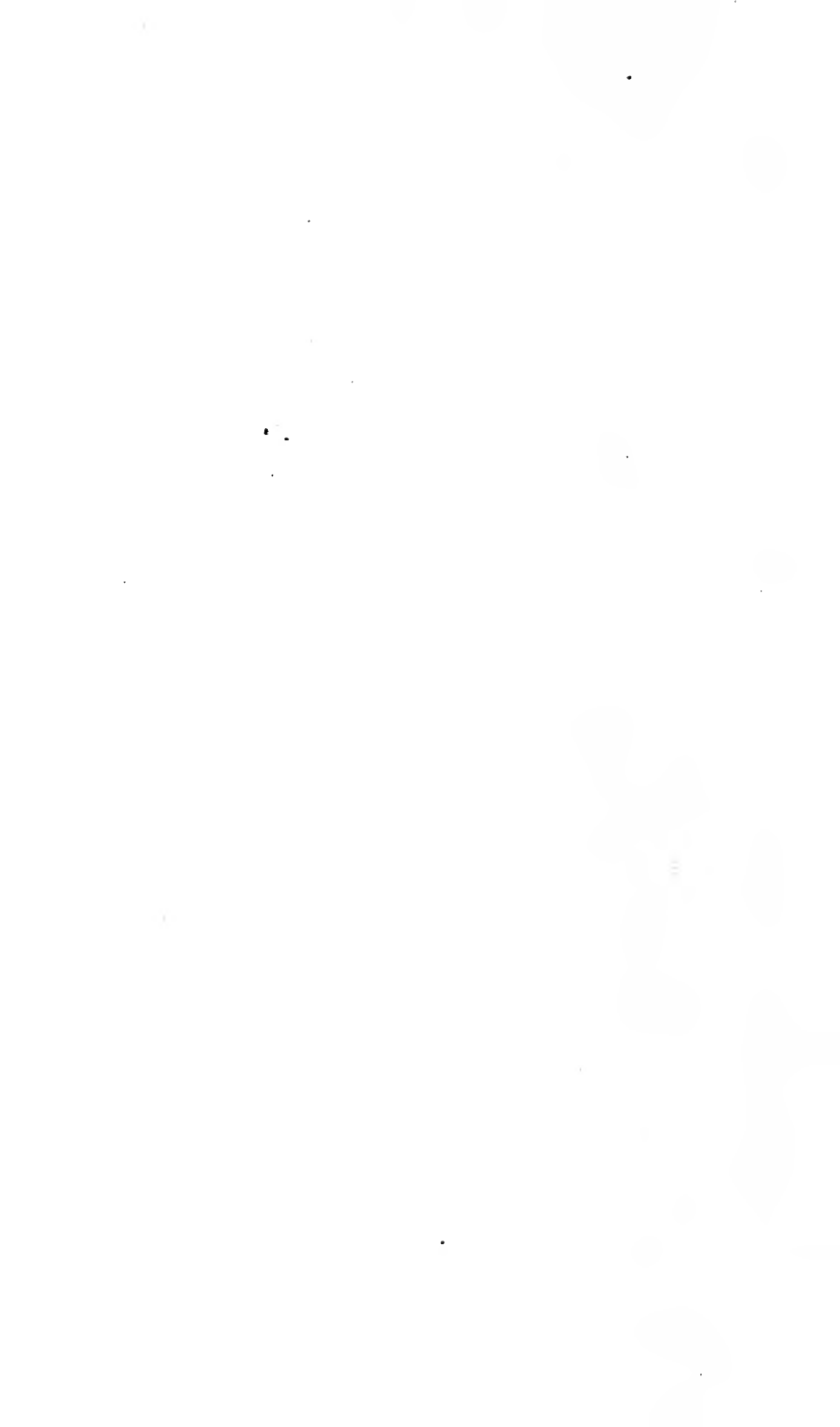
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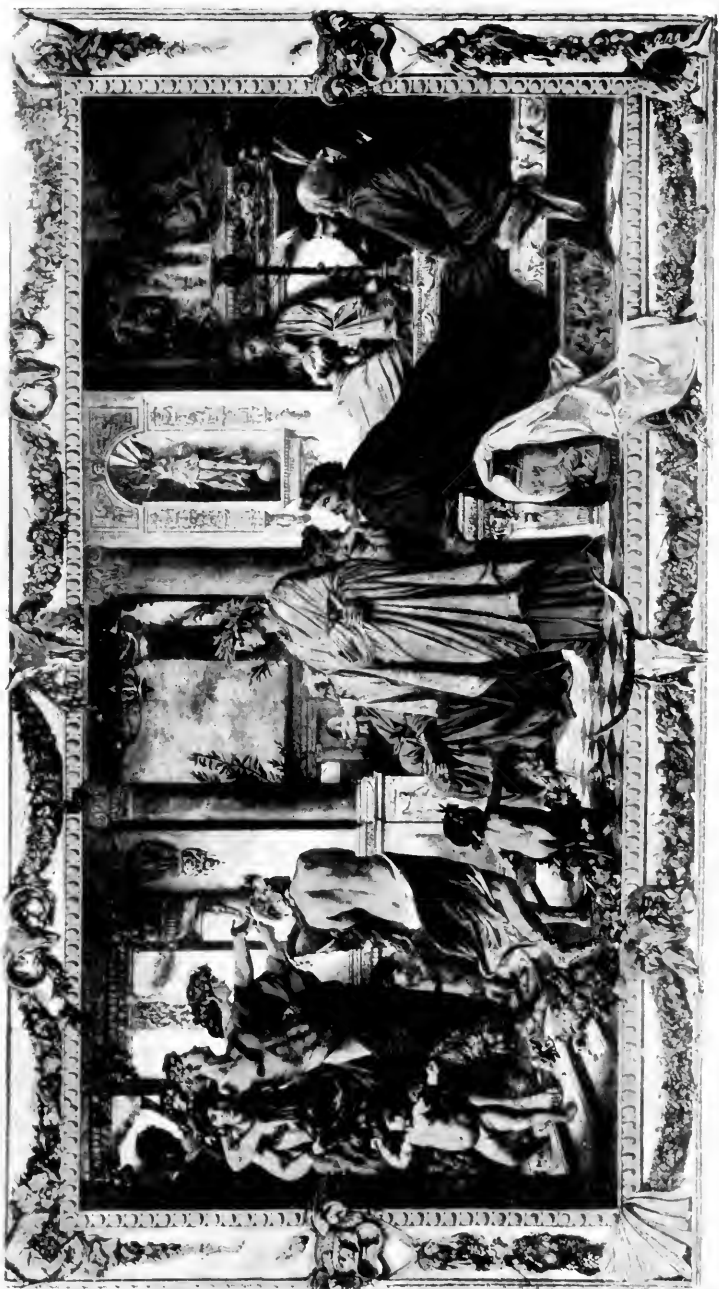


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THE BANQUET OF PLATO

Photogravure from the Painting by Anselm Feuerbach.

Banquets or Symposia were very frequent in ancient Greece. The Banquet of Plato, reproduced here from Feuerbach's original painting, gives us a lively idea of such entertainments at Athens. The enjoyment was heightened by agreeable conversation and by the introduction of music and dancing. Sometimes philosophical subjects were discussed, although a symposium, as the Greek term implies, was originally only intended as a drinking party. The guests reclined on couches and were crowned with garlands of flowers.

Feuerbach's great painting presents a symposium to which the banqueters, including Socrates, were invited by Plato to celebrate the tragic victory of Agathon, and, as they were not in the mood for hard drinking, they dismissed the flute girl, and entertained each other with the praise of love. "The Banquet of Plato" won universal admiration when it was first placed on view at the International Exhibition of Munich in 1869.

INTERNATIONAL CONGRESS OF ARTS AND SCIENCE

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HOWARD J. ROGERS, A.M., LL.D.
DIRECTOR OF CONGRESSES

VOLUME X

ANTHROPOLOGY AND MENTAL SCIENCE

COMPRISING

Lectures on Ethnology, History of Anthropology, Archaeology,
Somatology, Comparative and Genetic Psychology,
General and Abnormal Psychology,
Problems of Sociology, and
Social Structure



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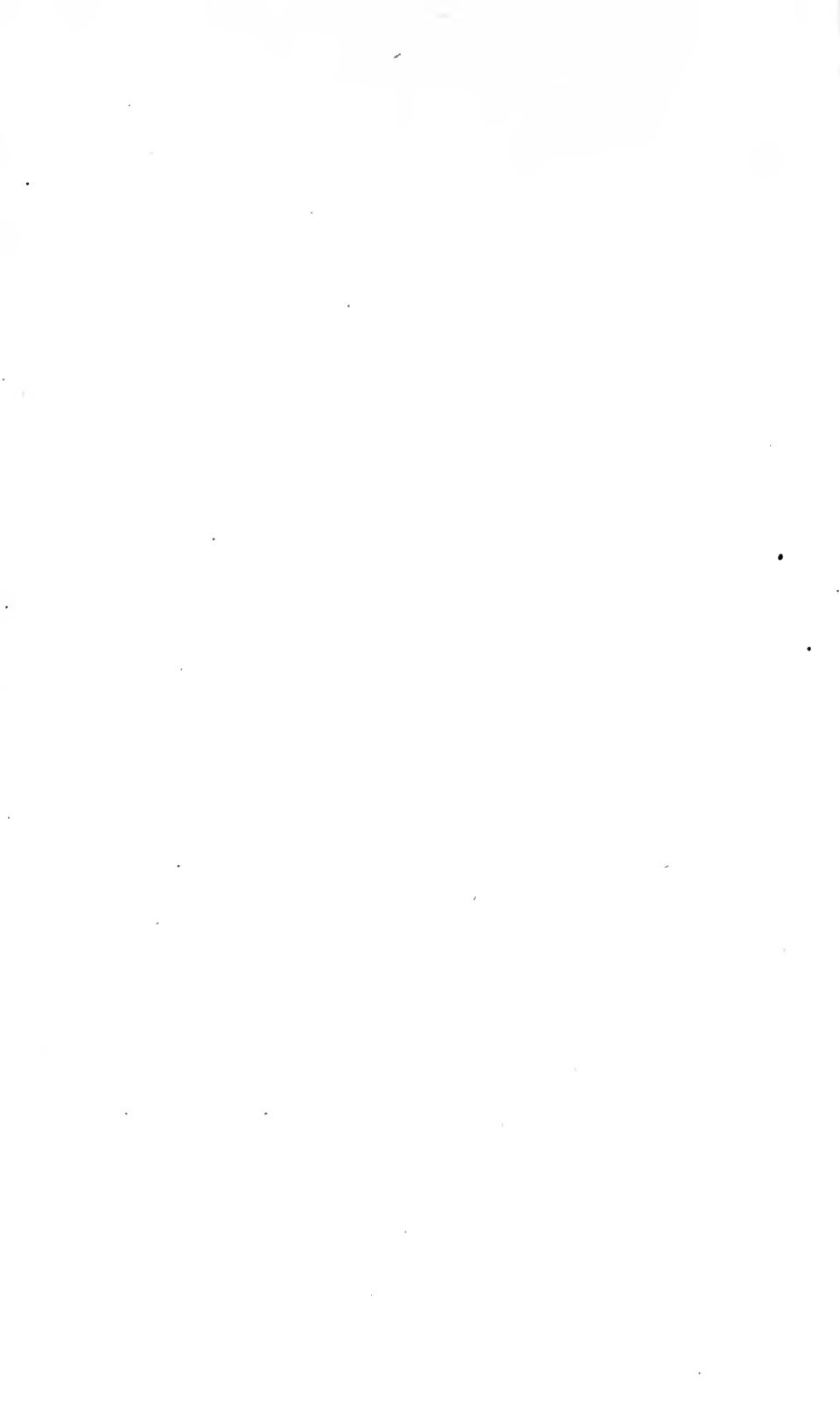


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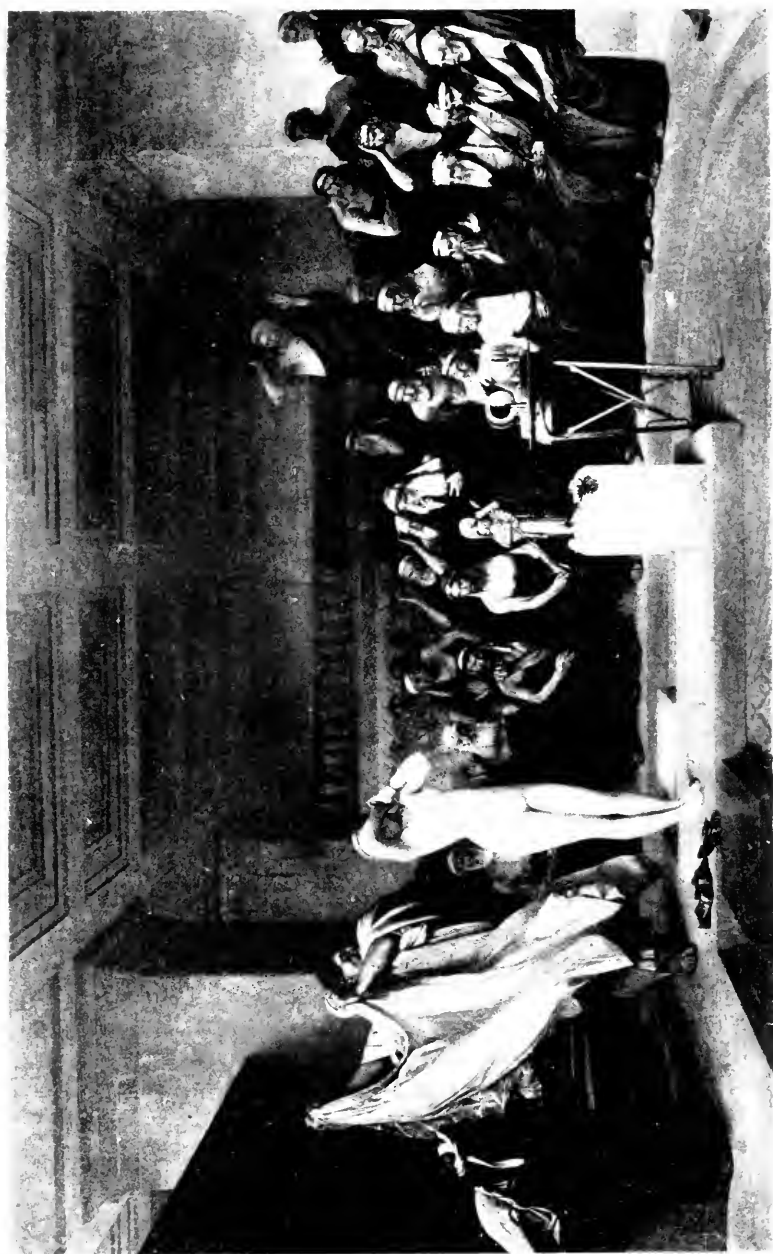
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PHRYNE BEFORE THE JUDGES

Photogravure of the Painting by Jean Léon Gérôme

Phryne lived in the middle of the fourth century B.C. She was a celebrated Athenian courtesan, and is supposed to have been the model of the picture "Aphrodite Anadyomene," by Apelles, and of the "Cnidian Aphrodite" by Praxiteles. According to the legend her enemies accused her of profaning the Eleusinian Mysteries. Summoned before the tribunal of the Heliasts, she was defended by the rhetorician, Hyperides, one of her lovers, who perceiving that his eloquence failed to convince the judges, threw back her veil, and thus, by a display of her exquisite beauty, not only secured her acquittal, but had her carried in triumph to the temple of Venus.

THE LITTLE GIRL

By MARY W. B. WILSON

There was a little girl who lived in a little house
in a little town, and she was very pretty.
One day she went to school, and she was
very happy. She had a new dress, and
she was very proud of it. She was
very happy, and she was very pretty.
She was very happy, and she was very pretty.
She was very happy, and she was very pretty.
She was very happy, and she was very pretty.

DEPARTMENT XIV — ANTHROPOLOGY



DEPARTMENT XIV—ANTHROPOLOGY

(Hall 8, September 20, 2 p. m.)

CHAIRMAN: PROFESSOR FREDERIC W. PUTNAM, Harvard University.

SPEAKERS: DR. W J MCGEE, Director of the Public Museum, St. Louis.
PROFESSOR FRANZ BOAS, Columbia University.

ANTHROPOLOGY AND ITS LARGER PROBLEMS

BY W J MCGEE

[W J McGEE, Director of the St. Louis Public Museum. b. Farley, Dubuque County, Iowa, April 17, 1853. Self-educated. Land surveyor, 1874-76; Student of geology and archeology, 1877-81; made geologic and topographic survey of Northeastern Iowa, 1878-82; Reported upon building-stones of Iowa for Tenth Census, 1881-82; Geologist, United States Geological Survey, 1883-93; Ethnologist in charge of the Bureau of American Ethnology, 1893-1903; Chief of Department of Anthropology and Ethnology, Louisiana Purchase Exposition, 1903-05. President of the American Anthropological Association and of the National Geographic Society; ex-President of the Anthropological Society of Washington; Acting President of the American Association for the Advancement of Science; Vice-President of Archeological Institute of America; senior U.S. Commissioner in American International Commission of Archeology and Ethnology. Author of *Pleistocene History of North Eastern Iowa*; *Geology of Chesapeake Bay*; *The Lafayette Formation*; *The Potable Waters of Eastern United States*; *The Siouan Indians*; *Primitive Trephining in Peru*; *The Seri Indians*; and numerous scientific memoirs, and several hundred minor articles.]

YOUNGEST in the sisterhood of sciences, anthropology borrows principles and methods from all the older branches of knowledge; and her first problem — a problem renewed with each step of advance, and hence endless as the problem of quarry to the huntsman or of crop to the planter — is that of determining her own relations in the realm of knowledge, her own place and powers in the intellectual world.

Viewed in the light of history, it is no accident that anthropology is the youngest of the sciences; for it is the way of knowledge to begin with the remote and come down to the near — to start with the stars, linger amid the mountains, rest awhile among rare gems, and only slowly approach such commonplace things as plants and animals and soils, to end at last with man. *How* growing knowledge has pursued paths leading from the remote to the near, from the rare to the common, from the abnormal to the normal, from the unreal to the real, from wonder to wisdom, — indeed, from chaos to cosmos and from star to man, — all this is history; *why* these paths have been pursued may well remain a problem until more is known of the constitution of the human brain and of the laws of mind.

Yet, viewed in the light of the relations among the sciences, it is no mere chance that the science of man rises from the hip and shoulder and head of the elder-sister sciences, as the family infant is borne by primitive folk; for the sciences have come up, just as the cosmos seems to have developed, in an order of increasing complexity. The stellar bodies are interrelated through gravity and various forms of molar force which may be combined under the term *molarity*; and astronomy in its earlier form was the science of these relations. As the planets took shape (whether through nebular integration or through planetesimal aggregation), chemical reactions became paramount over mechanical relations, and *affinity* was superadded to molarity; and in a parallel order chemistry was added to astronomy in the growth of knowledge. When our planet was incrustated, and the great deeps were divided into sea and land, life appeared, and thereby *vitality* was superadded to affinity; and concordantly, as knowledge grew, the biotic sciences followed the more exactly quantitative earlier branches. In cosmic time animal activity followed hard on more inert vegetal life, and *motility* was superadded to vitality; and in human time animals were domesticated soon after plants were cultivated, while zoölogy grew up nearly apace with phytology. As the earth aged into continental and seasonal steadiness, and the struggle for organic existence grew strenuous, more and more of the battles were lost to the strong and the races to the swift, and were won by the intelligent, and thereby *mentality* was superadded to vitality as a factor in earth-history, and man came to his own as a mind-led monarch over lower life and a progressive conqueror of the natural forces; and in like manner, as human history matures, it records anthropology as the younger-kin of zoölogy. In a word, man, as the head and intellectual ruler over the realm of life, alone stands for all the fundamental forces of molarity *plus* affinity *plus* vitality *plus* motility *plus* mentality, and is interrelated alike with sun and planet, agent and reagent, plant and seed, egg and animal, and with groups of his own kind; and, in a word, the science of man is, more than any other branch of knowledge, interdependent with all the sister sciences, and more many-sided than any of the rest.

The Setting of the Science

The scriptless nomads of the human prime (and of many lands) set their journeys by the stars and enshrined their beastly deities in the visible firmament, and thus astrology set out on a course still traceable through constellations and planet-myths; at the same time those mnemonic devices of the sky were mated with equally imaginative symbols of every-day things, and as these grew into

geometric designs and arbitrary characters, a system of *almacabala* — the earth-placed twin of sky-set astrology — took a course still marked by the ancient hieroglyphs of many lands. In the fullness of time (and primitive progress was tedious beyond telling), astronomy grew out of astrology as the first of the sciences, leaving a large residuum of mythology behind. In like manner, and at about the same stage (*i. e.*, about the birth-time of writing), algorithm and algebra came out of *almacabala*, leaving a residuum of black art and white magic, jugglery and enchantment; and as the algorithm grew into arithmetic and wizardly geomancy gave way to scholarly geometry, mathematics took shape as the complement of astronomy — and these sisters twain were nurses and teachers of all the younger sciences. Still the caldron of inchoate knowledge boiled and bubbled with Macbethian pother, and the foul fumes of black magic long concealed the few germs of real knowledge shaped by the steady pressure of actual experience — for this was the time of alchemy, whose slimy spume at last slipped away from chemistry, the third of the sciences.

Astronomy led writing (as the constellations attest), while mathematics followed close on writing and records, as its symbols show, and both belonged to what may be called the Naissance of Knowledge; chemistry appeared during the same period, bearing the prophecy of physics caught by Archimedes, yet remained a helpless weakling — the foil and puppet of medievalism — throughout the whole of the Dark Ages; but during the Renaissance the trio of elder sciences gained strength together and assumed lasting dominion over the realm of knowledge. Because their birth dates back to or beyond the beginning of records, the early stages of these sciences are imperfectly written; but the youngest science, anthropology, buys methods and principles from the more exact elders and pays amply in coin of history; for by tracing the careers of later-born or slower-grown folk and cults, anthropologists learn to retrace the lost steps in the careers of ancestral peoples and early cultures. Here lie some of the relations between anthropology and the elder sciences; she receives exact methods tested by millenniums of experience, and gives interpretations of the ideas and motives, the arts and accomplishments, the modes of thought and the stages of progress, of the earliest science-makers. Astronomy and mathematics and chemistry are systems of knowledge produced by men and minds, anthropology is systematic knowledge of these producers; and neither the old sciences nor the new can be rendered complete and stable without the support of the others.

The science of sentient man — of man as a thinking and collective organism — helps to illumine the Dark Ages no less than

the Naissance of Knowledge; and at the same time it sheds new light on the origin of that group of modern sciences of which it is itself the youngest. The early period of intellectual activity in Babylon and Alexandria, Athens and Rome, may be likened to the blossoming of a plant in springtime; it was the summing and outshowing of a mentality shaped during uncounted generations of experience along definite lines, in environments of distinctive sort — and the blossoming was fuller of promise than the ancients dreamed. Then came the ages that were dark because energy was diverted to new lines; for leaders of thought gave way to leaders of action, and these became pioneers in new environments where threads of new experience had to be spun from the lives of generations before they could be woven into the fabric of knowledge. The forefathers of the joint founders of scholasticism and science lived winterless lives in sunny lands, and the early science reveals an elysian tinge; while the ancestry of the makers of modern (or natural) science spent their force in conquering wood-lands and wood-life in cloudy and wet and long-wintered Europe, and their efforts finally yielded a harder and more practical product than that of the earlier and easier time. During the nature-conquest of a millennium and more, the ideals of the elder masters seemed lost in a survival of astrology and alchemy, a survival so well recorded in growing literature as to simulate a revival; yet the sense of the reality of things gained strength by exercise in the ceaseless contact with nature, while the oft-told magic was relegated to beldams and crones rather than reserved for rulers and high-priests as of old. The Renaissance revealed the influence of these centuries of nature-conquest and nation-planting which made the Europe of history; and its dawn showed that the seat of highest intellectual activity had slipped in the darkness from the sensuous shores of the eastern Mediterranean to the remote and rugged lands in which the world's richest blood and ripest culture were blent and pent against northern seas. The closest concentration of human strength was in Britain; the uttermost goal of conquest, the last resting-place of the conquerors of conquerors, where Cæsar might have wept for worlds, like Alexander long before; and here modern science began with Francis Bacon (1561–1626) as expounder. The Britannian Renaissance, coming so long after the Mediterranean Naissance, may be likened to the ripe-fruited of a plant in autumn; for it followed the vernal blossoming after a tedious interval of scarce-seen growth.

With the *Novum Organum* of Bacon, the last vestige of magic and mysticism fell away from the body of real knowledge; for not only was the practicality of centuries summed in the new system, but its author saw more clearly than any predecessor the

relation between the thinker and his thought, between the human mind and the rest of nature — he perceived that “Man . . . does and understands as much as his observations on the order of nature . . . permit him, and neither knows nor is capable of more.” On this and kindred verities he built a foundation for all the sciences, for the unwittingly-wandering elders as well as for those yet unborn, even down to anthropology — though this part of the foundation lay unused for three centuries. Bacon’s influence on contemporary and later thought was steady, albeit slow-felt; for his school was a normal by-product of the making of Europe, and he was the exponent of principles themselves the product of the world’s most significant chapter in human development. True, the next epoch was opened by a son of southern shores and a devotee of the oldest science, when Galileo (1564–1602) saw the sun-centred order of the solar system; yet it was left to English Newton (1642–1727) to shape the epoch and systematize all astronomy by a law of gravitation based on commonplace observation, while the third epoch of modern science came with Linné (1707–1778), like Bacon and Newton a product of the harsh north-land and an exponent of practical experience, who led conscious seeing down from the stars to the plants and animals of daily knowledge. Of all the world’s thinkers Linné would seem second only to Bacon in originality, if that quality be measured by grasp of realities; and while his system was crude, especially in relation to animals, his gift of phytology (or botany) enriched knowledge and opened the way for the rest of the natural sciences. Linné the Swede was soon followed by Hutton the Scot (1726–1797), with a practical science of the rocks long contested by Werner the German (1750–1817), under a theory smacking of Alexandria and Athens; but the sturdy English quarryman, William Smith (1769–1839), successfully supported his northern neighbor until his countryman Lyell (1797–1875) came up to make geology a science. The influence of these sons of woodland and wold extended rapidly and widely, rooting readily in the fertile minds of their kinsmen, while the printing-press spread the stimulus of their work over all Europe and unified the knowledge of the nations.

The next act attested the blending of the ancient and the modern, of Athenian and Anglian, of Aristotelian and Baconian, of the southern and the northern; and the scene was the middle ground of France. There Lavoisier (1743–1794) applied modern practicalness to chemistry, and discovered the indestructibility of matter; Lamarek (1744–1829) sought to amend the Linnean system, yet pushed too far in advance of observation (and his times) for full following; and the brothers Cuvier (1769–1838) so improved on Linné as to give form and substance to zoölogy, and

incidentally to presage anthropology. These movements led up to the distinctively nineteenth century stage, and a renewed pulse of British activity; Joule and others measured the mechanical equivalent of heat and experimentally demonstrated the persistence of motion, and so founded physics; by masterly observation and comparison, Darwin defined the development of species (including man), thus infusing the blood of life into the Linnean system; Huxley and Tyndall simplified all science by establishing the uniformity of nature; and at last American scions of Anglian sires independently discovered through anthropologic observation that the minds of all men of corresponding culture-grade respond similarly to similar stimuli, thereby proving the soundness and completeness of the Baconian foundation of knowledge. The four laws of nature established in western Europe — the Indestructibility of Matter, the Persistence of Motion, the Development of Species, and the Uniformity of Nature — are, in fact, complementary to the law forecast by Bacon and applied in America three centuries later as the Responsivity of Mind; and the five laws are the cardinal principles of science. It is curious that, while Bacon's view of the mind as a faithful reflex of other nature colored and shaped the progress of science through the centuries (for how could Lavoisier, or Joule, or Darwin, or Huxley repose confidence in their observations without resting even greater confidence on the accuracy of the observing mechanism?), the Baconian law lay in the background of thought without conscious expression (despite daily subconscious use) from the dawn of the seventeenth century down to the last quarter of the nineteenth. *How* the law was neglected is the history of modern science read between lines; *why* it was neglected until the science of sentient man arose to rediscover it is a present problem for those anthropologists whose sympathies and interests cover the full field of human knowledge.

Howsoever the three-century eclipse of Bacon's fundamental law be interpreted, the history of science stands out sharp and clear when viewed in the light of anthropology. There were two great movements, the Naissance in the east-Mediterranean region, and the Renaissance, commonly credited to the Mediterranean countries, but really made in the North Sea region; each comprised a long interval of accumulation of experience and a briefer time of formulation of knowledge; in each the formulated knowledge faithfully expressed the habits and characters of leading thinkers of the times; and the modern movement reached the commonplace things of every-day life in such wise as to render science a devoted handmaid rather than a remoter *déesse*, a means of welfare rather than an end of aspiration. The anthropologist

feels that the comprehensiveness of the ancient and the practicalness of the modern unite in his science, which (despite the narrow definitions of earlier decades) is that of mind-controlled man, the dominant power of the visible world, the science-maker as well as the subject of science.

Such are a few of the relations of anthropology to the sister sciences, a few of the ways in which the science of sentient man touches the sum of human knowledge; to catalogue all would be interminable.

The Rise of Anthropology

When the science of man grew up in the North Sea region, it was at first little more than a branch of zoölogy, and its makers busied themselves with features of the human frame corresponding to those of lower animals; comparative anatomy was cultivated with assiduity and profit, anthropometry flourished, and mankind were apportioned into races defined by color of skin, curl of hair, slant of eyes, shape of head, length of limb, and other structural characters — *i. e.*, the methods and principles of zoölogy were projected into the realm of humanity. It was during this stage that homologies between human structures and those of lower animals were established in such wise as to convince attentive students that mankind must be reckoned as the ennobled progeny of lower ancestry; true, the conviction grew slowly against the instinctive antagonism of the investigators themselves and the less effective (though louder) protests of contemporaries, yet the growth was so sure that the question of the ascent of man is no longer a problem in anthropology. Meantime the masters — and here Huxley and Darwin must always rank — gave first thought to normal and typical organisms; their disciples followed the same commendable course, and as other lines of man-study opened they called their work physical anthropology. One of the collateral lines reverted to the abnormal (in which knowledge commonly begins) and re-curved toward the Mediterranean (where the influence of Alexandria and Athens still lingers), to mature in criminal anthropology — the science of abnormal man; another line led through prehistoric relics to archeology, and still another stretched out to the habits and customs of primitive peoples, and eventually to comparison of these with the usages and institutions of civilized life. The last of these lines was laid out in Britain largely by Tylor, and was pursued in Germany and other European countries as general anthropology, ethnography, anthropo-geography, etc.

Even before this growth began, a development not unlike that accompanying the making of Europe (save that the progress was more rapid) was under way in America; for the pioneers not only

pushed out into their wilderness like their forbears of generations gone, but faced the novel experiment of life in contact with savage or barbaric tribes. To this new stimulus their vigorous minds responded promptly; the daily experiences were quickly flocked on distaffs of thought, spun into threads of knowledge, and duly woven into a web of practical science — a fabric no less independent in the making than that of Bacon in his day. Notable among the American pioneers was Albert Gallatin (1761–1849), statesman and scientist; he not only perceived, like his fellows, that the color and stature and head-shape of the savages were of trifling consequence in contrast with their actions and motives, but that the index to their real nature was to be found in what they habitually did; and he summed American experience up to his time in a preliminary classification of the native tribes on the basis of language. This advance marked an epoch in science no less important than that of Linné; true, it was not minted at a stroke nor finished without aid from others, yet Gallatin was the coiner, and the rough-stamped system was history's most memorable essay toward the scientific arrangement of mankind by what they *do* rather than what they merely *are*. Later Morgan (1818–1881) extended practical observation to the institutions of the aborigines in such wise as to found inductive sociology;¹ and still later Brinton (1837–1899) made noteworthy advances toward classifying the Amerinds (*i. e.*, the native tribes) by their own crude philosophies, thus forecasting an inductive science now called sophiology. These advances seem simple and easy in the light of present knowledge, and may look small to present hindsight, yet in originality of work and boldness of conception they rank with the advances of Linné and Lavoisier; and be it remembered that they were not borrowed in any part, but bought at cost of the sweat and blood of often tragic experience. The unprecedented practicalness of American anthropology is attested by the fact that, while Morgan and Brinton still wrought (in 1879), a governmental bureau was created to continue the classification of the native tribes; and its direction was intrusted to Powell, a master able not merely to occupy but greatly to extend the foundation laid by Gallatin. Under this impetus the new science progressed apace; American students multiplied; observations spread afar; each discovery prepared the way for others, and the new principles opened to scientific view the entire field of the humanities — that field aforetime claimed on one side by scholastic and statist, and held on the other by devotees of poesy and romance. The growing knowledge bridged the seas, and the Powellian product

¹ The speculative sociology of Auguste Comte (1798–1857) and the semi-speculative system of Herbert Spencer are to be noted merely as standing on somewhat distinct bases.

blent with that of Tylor (both profiting by the experiences of British India), and pushed on to several Continental centres during the last two decades of the nineteenth century.

Toward the close of the old century, what may be called the kinetic and collective characters of humanity were brought out clearly, and the American aborigines (with other peoples as well) were defined by the *activities*, *i. e.*, by what they *do*, and this collectively — for in the realm of humanity no one lives to himself alone, but all are joined in twos and larger groups. Now it cannot be too strongly emphasized that the basis of this definition differs fundamentally and absolutely from that of any other science; for all other entities — stars and planets, molecules and ions, minerals and rocks, plants and animals — are defined by what they *are* (perhaps measurably by the way in which they respond to external forces), while the humans are defined and classed by what they *do* spontaneously and voluntarily as self-moving and self-moved units or groups. Necessarily this view of humanity awakens inquiry as to why the human entity stands in a distinct class among the objects of nature; yet this is hardly a present problem, since the makers of modern anthropology find full answer in that unique nature-power lying behind the kinetic character of unit or group, *viz.*: *mentality*. So in the last analysis the modern definitions of mankind are primarily psychic; and it matters little whether men are classed by what they *do* or by what they *think*, save that doing is humanity's largest heritage from lower ancestry, and hence precedes thinking; the essential point is that the practically scientific classification of mankind must rest on a kinetic basis, *i. e.*, on self-developed and self-regulated conduct.

Of late the activities themselves are grouped as arts, industries, laws, languages, and philosophies, and each group constitutes the object-matter of a sub-science, thus giving form to esthetology, technology, sociology, philology, and sophiology; and these (together called demonomy, or principles of peoples), with somatology and psychology, make up the field of *fin-de-siècle* anthropology — the last two corresponding respectively with the physical anthropology of most European schools and the strictly inductive mind-science of current American schools, while the first two include archeology as their prehistoric aspects. These outlines and partitions of the groups are essential, although in actual interest they lie beneath the full fruitage of the field, as a wire-hung skeleton lies below the sentient body athrob with vitality and athrill with consciousness of power over lower nature. This fruitage is too large and luxuriant for ready listing; it need now be noted only that, in the modern anthropology, sometimes styled the New Ethnology, the peoples of the world are not divided into races (save perhaps in

secondary and doubtful fashion) but grouped in culture-grades, and that these culture-grades are of special use and meaning, in that they correspond with the great stages of human progress from the lowly and unwritten prime to the brightness of humanity's present.

The culture-grades (and progress-stages) may be defined in terms of arts or of industries, of laws, of languages, or of philosophies, and the definitions will coincide so closely as to establish the soundness of the system, though it is customary to define them in terms primarily of law (or social organization) and secondarily of faith or philosophy. So defined, the grades (and stages) are: (1) Savagery, in which the social organization is based on kinship traced in the maternal line, while the beliefs are zoötheistic; (2) Patriarchy, or Barbarism, in which the law is based on real or assumed kinship traced in the paternal line, and in which belief spreads into pantheons including impressive nature-objects as well as beasts; (3) Civilization, in which the laws relate primarily to territorial and other proprietary rights, while the philosophies grow metaphysical and the beliefs spiritual; and (4) Enlightenment, in which the law rests on the right of the individual to life, liberty, and the pursuit of happiness, and in which the philosophy is scientific or rational, while the faiths grow personal and operate as moral forces. The peculiar excellencies of this classification lie in its simplicity, and in the fidelity with which it reflects the unique nature-power lying behind the kinetic character of the human entity, *i. e.*, mentality; for, in the last analysis, the stages but portray and measure the normal growth of knowledge. Thereby the system sets milestones in the path of human progress, in numbers sufficient to outline its trend with satisfactory certainty; and it is especially notable that this trend is from the lower toward the higher with respect to every distinctively human attribute.

So anthropology came up, chiefly on the western hemisphere and under the stimulus of unique and strenuous experiences; and so it has assumed form and substance and spread widely over the world during two decades past. Viewed from its own high plane, the growth of the science presents no puzzling problem; yet, since no mind leaps lightly from classification on a static basis (as in somatology and its parent zoölogy) to classification on a kinetic basis (as in demonomy), the modern aspects of the science are full of problems to some students.

Problems of Classification

While the essential characters of mankind reside in mind-shaped activities, it remains true that the mental mechanism is planted in

a physical structure derived from lower ancestry by uncounted generations of development; and the problem as to the weight properly assignable to hereditary structural characters in classifying men and peoples remains, in many minds, a burning one. As an academic problem, this may be said to distinguish the new anthropology from the old, and to divide the anthropologists of the day into opposing schools, one chiefly American, the other chiefly European; as a practical problem of applied science, it has already engaged the attention of the world's leading statesmen (most of them approaching it empirically under the law that doing precedes thinking), and, with such help as they have been able to secure from science, they have solved it to their satisfaction, and have declared in numberless constitutional and statutory provisions that red and black, if not yellow men, share with whites the potency (at least) of enlightened citizenship, and should be led and aided and educated toward that goal despite the handicap of heredity. Here the highest statecraft and the most advanced anthropology strike hands; the statesman argues from his own experience that lowly men may be raised up, and hence that it were heartless to strike them down; the scientist but sums more numerous observations when he traces the upward trend of humanity; and both stand firmly on the rock of experiential knowledge. True, practical questions involved in the general problem are constantly arising: Can the Apache at San Carlos best be led toward citizenship by penalties for misdeeds, by rewards for righteousness, or by a combination of the two? Does the hereditary structure of the Negrito of interior Luzon debar him from hope of free citizenship, including that rectitude of conduct and nobility of impulse which free citizenship requires? Can the fellahin of Egypt be lifted from the plane of subjection to despotism to that of intelligent loyalty as royal subjects? Will the educational qualification in Maryland elevate the franchise? These are among the multifarious and ever-rising questions involved in the problem; and while the old anthropology stands aloof, they are receiving yearly solution at the hands of modern science and modern statecraft. Fortunately this present problem of anthropology is no less practical than were those confronting pioneer Puritans and Cavaliers in an earlier century, and like those it must be wrought out through living experience; still more fortunately, the chief factors in the problem are now grasped by students taught in the severe school of the settlers — grasped so firmly that little remains undone save the bringing-up of loiterers who linger in the haze of half-knowledge and hearken idly to bookish echoes of simpler science.

Connected with this problem is another no less burning: Does the mental mechanism of mankind react on physical structure in such wise as to control the development of individuals and types? As an

academic problem this is well-nigh lost in the dust of ill-aimed discussion (relating to the hereditability of acquired characters and a dozen other points) which it were indiscreet to stir; yet half an eye can see that, whatsoever pedagogues proclaim, the pupils are building bone and muscle, increasing strength and stature, and manifestly promoting brain-power and prolonging life by judicious regimen. As a practical problem this might be passed over, since the world's leading millions are so well advanced in *doing* that *thinking* may be trusted to follow duly (perchance soon enough to let the masters learn the lessons their pupils live), were it not for the ever-rising ancillary questions as to rate and trend of the progress. Thus, mean length of life, or viability, is increasing, especially among more advanced peoples, who live longer in proportion to their advancement; yet, although Mansfield Merriman computed a few years ago that the median age of Americans has gone up five years since 1850, while the Twelfth Census reports that our mean age of death advanced from 31.1 years to 35.2 years in a decade, it cannot be said that the rate of increase is known; and still less are the factors of increase (saving of infants, improved sanitation, bettered hygiene, shortened hours and intensified stress of labor, enhanced enjoyment of life, and all the rest) susceptible of statement in terms of definite quantity. The various questions of viability (than which no inquiries mean more to living men) are not to be answered through actuaries' tables based on selected classes, valuable and suggestive as these tables are; they must be answered through health offices and census bureaus — and their pressing importance forms one of the strongest arguments in support of permanent census bureaus in this and other countries. Thus, again, human strength is increasing, as suggested by the superior vigor and endurance found among advanced peoples and rising generations, and shown definitely by the constant breaking of athletic records; yet, while it is most significant that record-breaking progresses at an increasingly rapid rate (*i. e.*, more records are broken during each decade than during the last), the rate of increase remains problematic. Similarly, that measure of faculty expressed in coördination of mind and body is increasing, as shown by the ever-growing and never-failing ability of engineers, mechanics, builders, electricians, and other specialists to master and command the strength-trying devices of modern times — locomotive and marine engine, dynamo and steam hammer, range-finder and machine-gun, and all the rest; yet both the rate and the factors of increase in human faculty remain in the realm of the unmeasured. These are but sample questions ancillary to the practical problem as to the reaction of function on structure; they merely suggest ways in which mind born of body in humanity's prime is rising into dominion over fleshly organ and constitution as

well as over subhuman nature — and these ways remain for the future to trace.

A related problem, although minor in itself, has recently risen into prominence through the impetus of importation oversea; it is that of "degeneracy." The observational data for the idea of human retrogression are apparently voluminous (though seen to be mainly of opposite meaning in the light of modern human knowledge) and the notion is by no means new; but the ratiocinative basis of the recent fad is obviously chaotic, *e. g.*, in that an individual is classed as "degenerate" by reason of the inheritance of ancestral characters, or, in other words, because he is no better than his sire or grandsire. True, if normal man is rising to successively higher planes of physical and mental perfection through constructive exercise, as modern anthropology so clearly indicates, the unfortunate who is no better than his ancestry is indeed below his proper place in the scheme of humanity — though not degenerate, but merely unregenerate (in non-ecclesiastical sense). It is also true that maleficent exercise may produce cumulative and apparently aberrant effects, just as does the beneficent exercise normal to mankind, the one yielding Nero and Billy the Kid as the other Shakespeare and Bacon (twin luminaries of intellectual history); but its end is destruction, with the consequent elimination of the criminal, while its middle merely marks lower layers in the constantly ascending stream of humanity. Naturally a theme filling tomes and flooding lighter literature for years is too large for full analysis in a paragraph; it must suffice to note that the "degeneracy" of the day was not unfitly characterized even so early as when aphorism foreran writing, and the proverb beginning "Put a beggar on horseback" gained currency. The great facts are (1) that less vigorous individuals fall short of the mean progress of their fellows in such wise as to get out of harmony with the institutions framed by their leaders, and (2) that less vigorous peoples fall behind contemporary lawmakers in such wise that their institutions are inferior to those of progressive nations; while under the conditions of modern life laggards and leaders commingle so freely that the differences are emphasized and kept in mind. Nor are these differences slight or meaningless; they touch the very fiber of living and being so deeply that primal savages cannot share the thought of those in any higher culture-stage, that barbaric serf and despot are wholly alien to subjects and citizens, and that subjects are out of place among citizens. So every advanced nation has its quota of aliens through foreign or ill-starred birth and defective culture, who can be lifted to the level of its institutions only through a regeneration extending to both body and mind, both work and thought — they are

the mental and moral beggars of the community, who may not be trusted on horseback but only in the rear seat of the wagon. In truth, standards are rising so rapidly that the lower half find it hard to keep up.

In one aspect the problem of the unregenerate is ever pressing, since knowledge is not yet a birthright (save in the promising germ of instinct) among human scions of lower ancestry; but even in this aspect a progressive solution is wrought with ever-increasing success through public education. The most serious side of the problem arises in the immigration or upgrowth of the unfit, who sometimes ferment in the unwholesome leaven of anarchy before education has time for perfect work; and this danger cries out for public action through the blood of both presidential and monarchical martyrs to public duty. The morbid view imported by Nordau and his ilk demands little American notice, however large the problem in Europe; for under the stimulus of that personal freedom which is the essence of enlightenment, normal exercise of mind and body springs spontaneously, while hereditary disease, constitutional taint, idiocy, unhealthy diathesis, and all manner of transmissible abnormalities tend to wear themselves out, as our vital statistics sufficiently show.

These are a few of the present problems of anthropology involved in classifications growing out of the dual nature of mankind — the physical nature inherited from lowly ancestry, and the mental nature (in all its protean aspects) built up through exercise during uncounted generations of functional development. They may seem irrelevant to that earlier anthropology which is content to define mankind by skulls of the dead; but they illustrate the living importance of that modern science which defines mankind by actions and thoughts, movements and motives.

Meaning of Activital Coincidences

About 1875 archeologists, and after them students of primitive folk still living, became impressed with certain similarities among industrial and symbolic devices of remote regions. One of the widespread devices is the arrow; used commonly with the bow, sometimes with the *atlatl*, or throwing-stick, and again as a dart projected by the hand alone, it has been found on every continent and in nearly every primitive tribe. Another is a quadrate or cruciform symbol; either in the form of a simple cross or in that of the cross with supplementary arms known as the *swastika* or *fylfot*, these symbols are common to Europe, Asia, Africa, both Americas, and numerous islands, though they have not been found in Australasia. At the outset such devices were accepted as links in

a chain of supposititious relationships, and as suggestions of common origin of both devices and devisers; but as observations multiplied, the hypothetic chain broke beneath its own weight, for the few similarities were gainsaid and far outweighed by numberless dissimilarities of a sort manifestly attesting independent development. About 1880 Powell summarized the observed resemblances and differences among devices, and showed that the former are to be regarded as coincidences due to the tendency of the human mind to respond to contact with external nature in a uniform way. A dozen years later Brinton re-summed the growing data and corroborated the Powellian conclusion; and on extending the inquiry to institutions, forms of expression, and types of opinion and belief (in which the coincidences are even more striking than in the material devices), he formulated a theory of "the unity of the human mind," in which he saw a suggestion that the mind was extraneous in origin, *i. e.*, impressed on mankind from without, — a view not unlike that long maintained by Alfred Russell Wallace. With the setting of the old century and the dawn of the new, the ever-multiplying facts were again reviewed, and the earlier generalizations were again sustained, but found to tell less than the whole story; for it was discovered that, while minds of corresponding culture-grade commonly respond similarly to like stimuli, minds of other grades frequently respond differently — as when the savage eviscerates an enemy and devours his heart as food for courage, or the barbarian immolates a widow on the bier of her spouse, or the budding Christian lends himself to the tortures of the Inquisition, each reveling in his own righteousness and reprobating all the rest, though all are alike ghastly and obnoxious to enlightened thought. The new generalization rendered it easy to define the limits within which the responses of different minds to similar impressions may be expected to coincide; thereby it cleared away many of the anomalies and apparent incongruities among the observed facts, thus strengthening the law of activital coincidences as first propounded. The introduction of a limiting term also rendered the law more specific; so that the sum of knowledge concerning the relations between mind and external nature may now be expressed in the proposition: *Minds of corresponding culture-grades commonly respond similarly to like stimuli.* By far the most important effect of the new generalization was the inevitable recognition of a cumulative mind-growth in passing from savagery to barbarism, thence to civilization, and on to enlightenment; for, in the first place, this recognition afforded a key to — indeed, a full explanation of — the sequence of the culture-grades, while, in the second place, it showed forth the course of the world's mental development as

a growth no less natural than that of tree or shrub, originating within, conditioned by external environment, and not derived from any extraneous source. Thus the generalization in 1900 of a quarter-century's observations on mankind brought empirical knowledge to the theoretical plane so masterfully projected by Bacon three centuries before — for he it was who first grasped the great concept that mind is at once product and mirror of other nature.

Is the Baconian foundation for all science sound; is the most sweeping generalization of anthropology safe? This problem — for the two questions are but one — is the most important presented by the science of man, indeed, by all science; for it threads the whole web of human knowledge, touches every human thought, tinctures every human hope, tinges every human motive. True, it is too large for easy apprehension, too round for ready grasp; but it spans the world's intellectual structure from corner-stone to dome, and must sooner or later be wrought out personally (as are all problems in the end) by every rational being.

Problems of Distribution

Anthropology arose in Britain as a branch of biology fertilized by the doctrine of organic evolution; it grew up in a field of thought dominated by a tradition of human descent from a single pair and shaped by the habit of tracing nearer ancestry to the worthier sires in otherwise neglected lineage, and the coincidence of the doctrine of differentiation with revered tradition and honorable regard for honored sires led naturally to an assumption of monogenesis. The assumption spread and pervaded the writings and teachings of anthropologists trained in the biologic school; it still prevails, and is still supported by the argument from biology, though Keane and others have balked at the corollary that wavy-haired White, kinky-haired Black, straight-haired Red, and variable-haired Brown nestled in the same womb and sucked at the same breast. It is needful to note that the assumption, albeit perfectly "natural," is purely gratuitous, and that it is not sustained by a single fact in anthropology as a science of observed and observable actualities: the Blacks are not growing blacker, the Reds are not blushing redder, no new races are arising, no old types are increasing in diversity; Graham Bell's note of warning against the danger of a deaf race advertised a solitary definite suggestion of the formation of a new human type, though even this seems to weaken with the lapse of time; indeed, it cannot be too strongly emphasized that, howsoever besetting and enticing the hypothesis of differentiation or diversification of *Homo sapiens* may be, it is absolutely without direct observational basis.

When practical anthropology arose in America, it was seen by Gallatin and Morgan and other pioneers that languages and social usages tend to spread among contiguous tribes; and as Indian students advanced, it was perceived that the tendency toward activital interchange extended also to arts and industries and myths, and had, indeed, resulted in the development of powerful federations (somewhat miscalled "nations"), such as the Iroquois League and the Dakota Confederacy. Meantime it was observed that the spontaneous interchange of words and weapons, usages and utensils, with contiguous tribes was sooner or later accompanied by intermarriage, so that blood and culture blent at once. Of course this observation merely reflected the unwitting experience of every generation among every people in every land; but, made as it was under the stress of practical problems of polity and peace, it awakened consciousness — and the *law of convergent development* among mankind was grasped. Once realized, the law was found of wide application; it was perceived that black folk are not growing blacker, nor brown men browner, nor red tribesmen redder, because (among other reasons) some interchange of culture and blood begins with first contact and increases with time, until at least some of the leaven of the highest humanity pervades the lump, while the ideals and standards of all progress toward unity; it was perceived that the types of *Homo sapiens* (*i. e.*, the "races" of mankind) are not differentiating, because of that irresistible mimetic impulse which is the mainspring of elevation, especially among the lower and measurably among the higher; it was perceived that culture is fertilized by contact with other culture more effectively than in any other fashion; and it was perceived that when the initial differences are not too great, blood fertilizes blood in such wise that the vigor of a people may be measured by the complexity of their interwoven strains—that Briton yesterday and American to-day led and still lead the world because the blood of each streamed up from a more varied group of vigorous sires than that of any earlier scion. The themes of culture-union and blood-blending are too broad and deep for treatment in a paragraph; yet it must be affirmed, with an emphasis which can hardly be made too strong, that these are the dominant factors of human development, and that this development, so far as actually observed, is always convergent, never divergent.

Now it is a logical corollary of the law of convergent development that mankind were originally more diverse than now, and hence that there must have been several *loci*, or centres, of human origin; and this corollary leads to a theory of polygenesis, which has been much discussed during a decade or two. Some of the polygenesists, like Keane, are content with four original stocks,

corresponding respectively to the white, black, brown, and yellow "races" of mankind (leaving the red man, or Amerind, to be interpreted perhaps as a migrated branch of the brown stock); others, like Powell, find it easier to think of an indefinitely large number of initial stocks and centres of development from a hypothetical prototype to the "human form divine" — a prototype represented perhaps in a particular place by the famous fossil from Java, the *Pithecanthropos erectus* of Dubois. The alternative hypothesis is that of the monogenesis assumed in the early days of man-science; and the choice — or adjustment — between these opposing views is one of the most prominent among the present problems of anthropology. The great facts are (1) that all known lines of human development are convergent forward, and hence divergent backward, and (2) that all well-known lines of biotic (*i. e.*, subhuman) development are divergent forward; *how* these incongruous lines are to be united across the dark chasm of that unknown time when man became man, remains a question only made larger thus far by each advance of knowledge.

The Problem of Humanization

To the comparative anatomist the gap between simian structure and human structure was of little note, even before it was divided by the Dubois discovery in Java; for the differences between higher apes and lower men are less than those between either (1) lower and higher apes, or (2) lower and higher men. Yet to the sympathetic student of mankind, these dead homologies are but unsatisfying husks; the great fact remains that even the lowest savage known to experience is human — man — in attitude, mien, habits, and intelligence, while even the highest apes are but bristly beasts. It were bootless to deny or decry the chasm separating the always human biped from the always beastly quadrumane, since it is the broadest in the entire realm of nature as seen by those who appreciate humanity in its fullness. *How* the chasm was crossed, either in the one place and time required by monogenesis, or in the many places and times demanded by polygenesis, is a question of such moment as to rank among the great problems of anthropology until (if ever) the solution is wrought. A tentative solution has indeed been suggested in the modified form of mating which must have attended the assumption of the erect attitude;¹ yet final solution awaits the future.

¹ *The Trend of Human Progress, American Anthropologist*, vol. I, p. 418, 1899.

The Problem of Human Antiquity

So long as the assumption of monogenesis prevailed, the question of the antiquity of man loomed large in the minds of students, while even under the hypothesis of polygenesis the date (geological or historical) of advent of the earliest man is of no small interest. So the discussion of human antiquity has grown into dozens of full volumes, hundreds of chapters, and thousands of special papers, not to include the tens of thousands of ill-recorded scientific utterances and literal millions of press items. This vast literature is not easily summed; it must suffice to say that the evidence seems to establish the existence of man in Asia and Europe and northern Africa during later Tertiary times, and thus before the glacial periods of the Pleistocene; but that the earliest Americans lagged behind, coming in probably before all the ice-periods closed, possibly nearer the earlier than the latest. Despite the wealth of literature, there is a woeful dearth of definite knowledge concerning the date or dates of man's appearance in different lands; and herein lies another of the present problems of anthropology.

Such are some of the larger problems of anthropology, that youngest science whose field touches those of all the rest. The smaller problems are legion; those of general sort are at once problems of science and of statecraft, of the daily life and welfare of millions, of greatest good to the greatest number. Fortunately all are such as to be solved by the slow but sure processes of observation and generalization; and it is especially pleasing to see — and to say — that these scientific processes are more steadily and successfully under way now than ever before.

THE HISTORY OF ANTHROPOLOGY

BY FRANZ BOAS

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I HAVE been asked to speak on the history of anthropology. The task that has been allotted to me is so vast, and the time at my disposal is so short, that it will be impossible to do justice to the work of the minds that have made anthropology what it is. It would even be futile to characterize the work of the greatest among the contributors to our science. All that I can undertake to do is to discuss the general conditions of scientific thought that have given rise to anthropology.

Viewing my task from this standpoint, you will pardon me if I do not first attempt to define what anthropology ought to be, and with what subjects it ought to deal, but take my cue rather from what it is and how it has developed.

Before I enter into my subject, I will say that the speculative anthropology of the eighteenth and of the early part of the nineteenth century is distinct in its scope and method from the science which is called "anthropology" at the present time, and is not included in our discussion.

At the present time, anthropologists occupy themselves with problems relating to the physical and mental life of mankind as found in varying forms of society, from the earliest times up to the present period, and in all parts of the world. Their researches bear upon the form and functions of the body as well as upon all kinds of manifestations of mental life. Accordingly, the subject-matter of anthropology is partly a branch of biology, partly a branch of the mental sciences. Among the mental phenomena, language, invention, art, religion, social organization, and law have received particular attention. Among anthropologists of our time we find a considerable amount of specialization of the subject-matter of their researches according to the divisions here given.

As in other sciences whose subject-matter is the actual distribution of phenomena and their causal relation, we find in anthropology two distinct methods of research and aims of investigation: the

one, the historical method, which endeavors to reconstruct the actual history of mankind; the other, the generalizing method, which attempts to establish the laws of its development. According to the personal inclination of the investigator, the one or the other method prevails in his researches. A considerable amount of geographical and historical specialization has also taken place among what may be called the "historical school of anthropologists." Some devote their energies to the elucidation of the earliest history of mankind, while others study the inhabitants of remote regions, and still others the survivals of early times that persist in our midst.

The conditions thus outlined are the result of a long development, the beginnings of which during the second half of the eighteenth century may be clearly observed. The interest in the customs and appearance of the inhabitants of distant lands is, of course, much older. The descriptions of Herodotus show, that even among the nations of antiquity, notwithstanding their self-centred civilization, this interest was not lacking. The travelers of the Middle Ages excited the curiosity of their contemporaries by the recital of their experiences. The literature of the Spanish conquest of America is replete with remarks on the customs of the natives of the New World. But there is hardly any indication of the thought that these observations might be made the subject of scientific treatment. They were and remained curiosities. It was only when their relation to our own civilization became the subject of inquiry that the foundations of anthropology were laid. Its germs may be discovered in the early considerations of theologians regarding the relations between Pagan religions and the revelations of Christianity. They were led to the conclusion that the lower forms of culture, more particularly of religion, were due to degeneration, to a falling-away from the revealed truth, of which traces are to be found in primitive beliefs.

During the second half of the eighteenth century we find the fundamental concept of anthropology well formulated by the rationalists who preceded the French Revolution. The deep-seated feeling that political and social inequality was the result of a faulty development of civilization, and that originally all men were born equal, led Rousseau to the naïve assumption of an ideal natural state which we ought to try to regain. These ideas were shared by many, and the relation of the culture of primitive man to our civilization remained the topic of discussion. To this period belong Herder's *Ideen zur Geschichte der Menschheit*, in which, perhaps for the first time, the fundamental thought of the development of the culture of mankind as a whole is clearly expressed.

About this time, Cook made his memorable voyages, and the culture of the tribes of the Pacific Islands became first known to

Europe. His observations and the descriptions of Forster were eagerly taken up by students, and were extensively used in support of their theories. Nevertheless, even the best attempts of this period were essentially speculative and deductive, for the rigid inductive method had hardly begun to be understood in the domain of natural sciences, much less in that of the mental sciences.

While, on the whole, the study of the mental life of mankind had in its beginning a decidedly historical character, and while knowledge of the evolution of civilization was recognized as its ultimate aim, the biological side of anthropology developed in an entirely different manner. It owes its origin to the great zoölogists of the eighteenth century; and in conformity with the general systematic tendencies of the times, the main efforts were directed towards a classification of the races of man and to the discovery of valid characteristics by means of which the races could be described as varieties of one species, or as distinct species. The attempts at classification were numerous, but no new point of view was developed.

During the nineteenth century a certain approach between these two directions was made, which may be exemplified by the work of Klemm. The classificatory aspect was combined with the historical one, and the leading discussion related to the discovery of mental differences between the zoölogical varieties or races of men, and to the question of polygenism and monogenism. The passions that were aroused by the practical and ethical aspects of the slavery question did much to concentrate attention on this phase of the anthropological problem.

As stated before, most of the data of anthropology had been collected by travelers whose prime object was geographical discoveries. For this reason the collected material soon demanded the attention of geographers, who viewed it from a new standpoint. To them the relations between man and nature were of prime importance, and their attention was directed less to psychological questions than to those relating to the dependence of the form of culture upon geographical surroundings, and the control of natural conditions gained by man with the advance of civilization.

Thus we find about the middle of the nineteenth century the beginnings of anthropology laid from three distinct points of view: the historical, the classificatory, and the geographical. About this time the historical aspect of the phenomena of nature took hold of the minds of investigators in the whole domain of science. Beginning with biology, and principally through Darwin's powerful influence, it gradually revolutionized the whole method of natural and mental science, and led to a new formulation of their problems. The idea that the phenomena of the present have developed from previous forms with which they are genetically connected, and

which determine them, shook the foundations of the old principles of classification, and knit together groups of facts that hitherto had seemed disconnected. Once clearly enunciated, the historical view of the natural sciences proved irresistible, and the old problems faded away before the new attempts to discover the history of evolution. From the very beginning there has been a strong tendency to combine with the historical aspect a subjective valuation of the various phases of development, the present serving as a standard of comparison. The oft-observed change from simple forms to more complex forms, from uniformity to diversity, was interpreted as a change from the less valuable to the more valuable, and thus the historical view assumed in many cases an ill-concealed teleological tinge. The grand picture of nature in which for the first time the universe appears as a unit of ever-changing form and color, each momentary aspect being determined by the past moment and determining the coming changes, is still obscured by a subjective element, emotional in its sources, which leads us to ascribe the highest value to that which is near and dear to us.

The new historical view also came into conflict with the generalizing method of science. It was imposed upon that older view of nature in which the discovery of general laws was considered the ultimate aim of investigation. According to this view, laws may be exemplified by individual events, which, however, lose their specific interest once the laws are discovered. The actual event possesses no scientific value in itself, but only so far as it leads to the discovery of a general law. This view is, of course, fundamentally opposed to the purely historical view. Here the laws of nature are recognized in each individual event, and the chief interest centres in the event as an incident of the picture of the world. In a way the historic view contains a strong æsthetic element, which finds its satisfaction in the clear conception of the individual event. It is easily intelligible that the combination of these two standpoints led to the subordination of the historical fact under the concept of the law of nature. Indeed, we find all the sciences which took up the historical standpoint for the first time soon engaged in endeavors to discover the laws according to which evolution has taken place. The regularity in the processes of evolution became the centre of attraction even before the processes of evolution had been observed and understood. All sciences were equally guilty of premature theories of evolution based on observed homologies and supposed similarities. The theories had to be revised again and again, as the slow progress of empirical knowledge of the data of evolution proved their fallacy.

Anthropology also felt the quickening impulse of the historic point of view, and its development followed the same lines that

may be observed in the history of the other sciences. The unity of civilization and of primitive culture that had been divined by Herder now shone forth as a certainty. The multiplicity and diversity of curious customs and beliefs appeared as early steps in the evolution of civilization from simple forms of culture. The striking similarity between the customs of remote districts was the proof of the uniform manner in which civilization had developed the world over. The laws according to which this uniform development of culture took place became the new problem which engrossed the attention of anthropologists.

This is the source from which sprang the ambitious system of Herbert Spencer and the ingenious theories of Edward Burnett Tylor. The underlying thought of the numerous attempts to systematize the whole range of social phenomena, or one or the other of its features, — such as religious belief, social organization, forms of marriage, — has been the belief that one definite system can be found according to which all culture has developed; that there is one type of evolution from a primitive form to the highest civilization, which is applicable to the whole of mankind; that, notwithstanding many variations caused by local and historical conditions, the general type of evolution is the same everywhere.

This theory has been discussed most clearly by Tylor, who finds proof for it in the sameness of customs and beliefs the world over. The typical similarity and the occurrence of certain customs in definite combinations are explained by him as due to their belonging to a certain stage in the development of civilization. They do not disappear suddenly, but persist for a time in the form of survivals. These are, therefore, wherever they occur, a proof that a lower stage of culture, of which these customs are characteristic, has been passed through.

Anthropology owes its very existence to the stimulus given by these scholars and to the conclusions reached by them. What had been a chaos of facts appeared now marshaled in orderly array, and the great steps in the slow advance from savagery to civilization were drawn for the first time with a firm hand. We cannot overestimate the influence of the bold generalizations made by these pioneers of modern anthropology. They applied with vigor and unswerving courage the new principles of historical evolution to all the phenomena of civilized life, and in doing so sowed the seeds of the anthropological spirit in the minds of historians and philosophers. Anthropology, which was hardly beginning to be a science, ceased at the same time to lose its character of being a single science, but became a method applicable to all the mental sciences, and indispensable to all of them. We are still in the midst of this development. The sciences first to feel the influence of an-

thropological thought were those of law and religion. But it was not long before ethics, æsthetics, literature, and philosophy in general were led to accept the evolutionary standpoint in the particular form given to it by the early anthropologists.

The generalized view of the evolution of culture in all its different phases, which is the final result of this method, may be subjected to a further analysis regarding the psychic causes which bring about the regular sequence of the stages of culture. Owing to the abstract form of the results, this analysis must be deductive. It cannot be an induction from empirical psychological data. In this fact lies one of the weaknesses of the method which led a number of anthropologists to a somewhat different statement of the problem. I mention here particularly Adolf Bastian and Georg Gerland. Both were impressed by the sameness of the fundamental traits of culture the world over. Bastian saw in their sameness an effect of the sameness of the human mind, and terms these fundamental traits *Elementargedanken*, declining all further consideration of their origin, since an inductive treatment of this problem is impossible. For him the essential problem of anthropology is the discovery of the elementary ideas, and, in further pursuit of the inquiry, their modification under the influence of geographical environment. Gerland's views agree with those of Bastian in the emphasis laid upon the influence of geographical environment on the forms of culture. In place of the mystic elementary idea of Bastian, Gerland assumes that the elements found in many remote parts of the world are a common inheritance from an early stage of cultural development. It will be seen that in both these views the system of evolution plays a secondary part only, and that the main stress is laid on the causes which bring about modifications of the fundamental and identical traits. There is a close connection between this direction of anthropology and the old geographical school. Here the psychic and environmental relations remain amenable to inductive treatment, while, on the other hand, the fundamental hypotheses exclude the origin of the common traits from further investigation.

The subjective valuation which is characteristic of most evolutionary system was from the very beginning part and parcel of evolutionary anthropology. It is but natural that, in the study of the history of culture, our own civilization should become the standard, that the achievements of other times and other races should be measured by our own achievements. In no case is it more difficult to lay aside the *Culturbrille* — to use von den Steinen's apt term — than in viewing our own culture. For this reason the literature of anthropology abounds in attempts to define a number of stages of culture leading from simple forms to the present

civilization, from savagery through barbarism to civilization, or from an assumed pre-savagery through the same stages to enlightenment.

The endeavor to establish a schematic line of evolution naturally led back to new attempts at classification, in which each group bears a genetic relation to the other. Such attempts have been made from both the cultural and the biological point of view.

It is necessary to speak here of one line of anthropological research that we have hitherto disregarded. I mean the linguistic method. The origin of language was one of the much-discussed problems of the nineteenth century, and, owing to its relation to the development of culture, it has a direct anthropological bearing. The intimate ties between language and ethnic psychology were expressed by no one more clearly than by Steinthal, who perceived that the form of thought is molded by the whole social environment of which language is part. Owing to the rapid change of language, the historical treatment of the linguistic problem had developed long before the historic aspect of the natural sciences was understood. The genetic relationship of languages was clearly recognized when the genetic relationship of species was hardly thought of. With the increasing knowledge of languages, they were grouped according to common descent, and, when no further relationship could be proved, a classification according to morphology was attempted. To the linguist, whose whole attention is directed to the study of the expression of thought by language, language is the individuality of a people, and therefore a classification of languages must present itself to him as a classification of peoples. No other manifestation of the mental life of man can be classified so minutely and definitely as language. In none are the genetic relations more clearly established. It is only when no further genetic and morphological relationship can be found, that the linguist is compelled to coördinate languages and can give no further clue regarding their relationship and origin. No wonder, then, that this method was used to classify mankind, although in reality the linguist classified only languages. The result of the classification seems eminently satisfactory on account of its definiteness as compared with the result of biological and cultural classifications.

Meanwhile the methodical resources of biological or somatic anthropology had also developed, and had enabled the investigator to make nicer distinctions between human types than he had been able to make. The landmark in the development of this branch of anthropology has been the introduction of the metric method, which owes its first strong development to Quetelet. A little later we shall have to refer to this subject again. For the present it may suffice to say that a clearer definition of the terms

"type" and "variability" led to the application of the statistical method, by means of which comparatively slight varieties can be distinguished satisfactorily. By the application of this method, it soon became apparent that the races of man could be subdivided into types which were characteristic of definite geographical areas and of the people inhabiting them. The same misinterpretation developed here as was found among the linguists. As they identified language and people, so the anatomists identified somatic type and people, and based their classification of peoples wholly on their somatic characters.

The two principles were soon found to clash. Peoples genetically connected by language, or even the same in language, were found to be diverse in type, and people of the same type proved to be diverse in language. Furthermore, the results of classifications according to cultural groups disagreed with both the linguistic and the somatic classifications. In long and bitter controversies the representatives of these three directions of anthropological research contended for the correctness of their conclusions. This war of opinions was fought out particularly on the ground of the so-called Aryan question, and only gradually did the fact come to be understood that each of these classifications is the reflection of a certain group of facts. The linguistic classification records the historical fates of languages and indirectly of the people speaking these languages; the somatic classification records the blood relationships of groups of people, and thus traces another phase of their history; while the cultural classification records historical events of still another character, the diffusion of culture from one people to another and the absorption of one culture by another. Thus it became clear that the attempted classifications were expressions of historical data bearing upon the unwritten history of races and peoples, and recorded their descent, mixture of blood, changes of language, and development of culture. Attempts at generalized classifications based on these methods can claim validity only for that group of phenomena to which the method applies. An agreement of their results — that is, original association between somatic type, language, and culture — must not be expected. Thus the historical view of anthropology received support from the struggles between these three methods of classification.

We remarked before that the evolutionary method was based essentially on the observation of the sameness of cultural traits the world over. On the one hand, the sameness was assumed as proof of a regular, uniform evolution of culture. On the other hand, it was assumed to represent the elementary idea which arises by necessity in the mind of man and which cannot be analyzed, or as the earliest surviving form of human thought.

The significance of these elementary ideas or universal traits of culture has been brought into prominence by the long-continued controversy between the theory of their independent origin and that of their transmission from one part of the world to another. This struggle began, even before the birth of modern anthropology, with the contest between Grimm's theory of the origin and history of myths and Benfey's proof of transmissions, which was based on his learned investigations into the literary history of tales. It is still in progress. On the one hand, there are investigators who would exclude the consideration of transmission altogether, who believe it to be unlikely, and deem the alleged proof irrelevant, and who ascribe sameness of cultural traits wholly to the psychic unity of mankind and to the uniform reaction of the human mind upon the same stimulus. An extremist in this direction was the late Daniel G. Brinton. On the other hand, Friedrich Ratzel, whose recent loss we lament, inclined decidedly to the opinion that all sameness of cultural traits must be accounted for by transmission, no matter how far distant the regions in which they are found. In comparison with these two views, the third one, which was mentioned before as represented by Gerland, namely, that such cultural traits are vestiges or survivals of the earliest stages of a generalized human culture, has found few supporters.

It is evident that this fundamental question cannot be settled by the continued discussion of general facts, since the various explanations are logically equally probable. It requires actual investigation into the individual history of such customs to discover the causes of their present distribution.

Here is the place to mention the studies in folklore which have excited considerable interest in recent times, and which must be considered a branch of anthropological research. Beginning with records of curious superstitions and customs and of popular tales, folklore has become the science of all the manifestations of popular life. Folklorists occupy themselves primarily with the folklore of Europe, and thus supplement the material collected by anthropologists in foreign lands. The theorists of folklore are also divided into the two camps of the adherents of the psychological theory and those of the historical theory. In England the former holds sway, while on the Continent the historical theory seems to be gaining ground. The identity of the contents of folklore all over Europe seems to be an established fact. To the one party the occurrence of these forms of folklore seems to be due in part to psychic necessity, in part to the survival of earlier customs and beliefs. To the other party, it seems to owe its origin to the spread of ideas over the whole continent, which may, in part, at least, be followed by literary evidence.

However this controversy, both in folklore and in anthropology, may be settled, it is clear that it must lead to detailed historical investigations, by means of which definite problems may be solved, and that it will furthermore lead to psychological researches into the conditions of transmission, adaptation, and invention. Thus this controversy will carry us beyond the limits set by the theory of elementary ideas, and by that of a single system of evolution of civilization.

Another aspect of the theories here discussed deserves special mention. I mean the assumption of a "folk-psychology" (*Völkerpsychologie*) as distinct from individual psychology. "Folk-psychology" deals with those psychic actions which take place in each individual as a social unit; and the psychology of the individual must be interpreted by the data of a social psychology, because each individual can think, feel, and act only as a member of the social group to which he belongs. The growth of language and all ethnic phenomena have thus been treated from the point of view of a social psychology, and special attention has been given to the subconscious influences which sway crowds and masses of people, and to the processes of imitation. I mention Steinthal, Wundt, Baldwin, Tarde, Stoll, among the men who have devoted their energies to these and related problems. Notwithstanding their efforts, and those of a number of sociologists and geographers, the relation of "folk-psychology" to individual psychology has not been elucidated satisfactorily.

We will now turn to a consideration of the recent history of somatology. The historical point of view wrought deep changes also in this branch of anthropology. In place of classification, the evolution of human types became the main object of investigation. The two questions of man's place in nature and of the evolution of human races and types came to the front. The morphological and embryological methods which had been developed by biologists were applied to the human species, and the new endeavors were directed to the discovery of the predecessor of man, to his position in the animal series, and to evidences regarding the direction in which the species develops. I need mention only Huxley and Wiedersheim to characterize the trend of these researches.

In one respect, however, the study of the human species differs from that of the animal series. I stated before, that the slight differences between types which are important to the anthropologist had led to the substitution of the metric or quantitative description for the verbal or qualitative method. The study of the effects of natural selection, of environment, of heredity, as applied to man, made the elaboration of these methods a necessity. Our interest in slight differences is so much greater in man than in animals or

plants, that here the needs of quantitative precision were first felt. We owe it to Francis Galton that the methods of the quantitative study of the varieties of man have been developed, and that the study has been extended from the field of anatomy over that of physiology and experimental psychology. His researches were extended and systematized by Karl Pearson, in whose hands the question, which was originally one of the precise treatment of the biological problem of anthropology, has outgrown its original limits, and has become a general biological method for the study of the characteristics and of the development of varieties.

We may now summarize the fundamental problems which give to anthropology its present character. In the biological branch we have the problem of the morphological evolution of man and that of the development of varieties. Inseparable from these questions is also that of correlation between somatic and mental characters, which has a practical as well as a theoretical interest. In psychological anthropology the important questions are the discovery of a system of the evolution of culture, the study of the modifications of simple general traits under the influence of different geographical and social conditions, the question of transmission and spontaneous origin, and that of "folk-psychology" *versus* individual psychology. It will, of course, be understood that this enumeration is not exhaustive, but includes only some of the most important points of view that occupy the minds of investigators.

The work of those students who are engaged in gathering the material from which this history of mankind is to be built up is deeply influenced by these problems. It would be vain to attempt to give even the briefest review of what has been achieved by the modest collector of facts, how his efforts have covered the remotest parts of the world, how he has tried to uncover and interpret the remains left by the races of the past.

I think we may say, without injustice, that his work is directed principally to the explanation of special problems that derive their chief interest from a personal love for the particular question and from an ardent desire to see its obscurity removed and to present its picture in clear outlines. Nevertheless, the well-trained and truly scientific observer will always be aware of the general relations of his special problem, and will be influenced in his treatment of the special question by the general theoretical discussions of his times. It must be said with regret that the number of anthropological observers who have a sufficient understanding of the problems of the day is small. Still their number has increased considerably during the last twenty years, and consequently a constant improvement in the reliability and thoroughness of the available observations may be noticed.

One or two aspects of the research work of the field anthropologist must be mentioned. The studies in prehistoric archeology have been given a lasting impulse by the discussions relating to the evolution of mankind and of human culture. Two great problems have occupied the attention of archeologists,—the origin and first appearance of the human race, and the historical sequence of races and of types of culture. To the archeologist the determination of the chronological order is an important one. The determination of the geological period in which man appeared, the chronological relation of the earliest types of man to their later successors, the sequence of types of culture as determined by the artifacts of each period, and approximate determinations of the absolute time to which these remains belong, are the fundamental problems with which archeology is concerned. The results obtained have the most immediate bearing upon the general question of the evolution of culture, since the ideal aim of archeology practically coincides with this general problem, the solution of which would be contained in a knowledge of the chronological development of culture. Of course, in many cases the chronological question cannot be answered, and then the archeological observations simply rank with ethnological observations of primitive people.

The field-work of ethnologists has been influenced in several directions by the theoretical discussions of anthropologists. We do not need to dwell on the fact that the scope of ethnological research has become more extensive and exhaustive by taking into consideration more thoroughly than before the whole range of cultural phenomena. More interesting than this is the stimulus that has been given to historic and psychological observation. On the one hand, the theory of transmission has induced investigators to trace the distribution and history of customs and beliefs with care, so as to ascertain empirically whether they are spontaneous creations, or whether they are borrowed and adapted. On the other hand, the psychic conditions that accompany various types of culture have received more careful attention.

These detailed archeological and ethnological studies have retroacted upon the theories of anthropology. The grand system of the evolution of culture, that is valid for all humanity, is losing much of its plausibility. In place of a simple line of evolution there appears a multiplicity of converging and diverging lines which it is difficult to bring under one system. Instead of uniformity, the striking feature seems to be diversity. On the other hand, certain general psychic facts seem to become discernible, which promise to connect "folk-psychology" with individual psychology. The trend of this development is familiar to us in the history of other sciences, such as geology and biology. The brilliant theories in which the

whole range of problems of a science appears simple and easily explicable have always preceded the periods of steady empirical work which makes necessary a complete revision of the original theories, and leads through a period of uncertainty to a more strictly inductive attack of the ultimate problems. So it is with anthropology. Later than the older sciences, it has outgrown the systematizing period, and is just now entering upon the empirical revision of its theories.

Our sketch of the history of the prevailing tendencies in anthropology would be incomplete without a few remarks on the men who have made it what it is. What has been said before shows clearly that there is hardly a science that is as varied in its methods as anthropology. Its problems have been approached by biologists, linguists, geographers, psychologists, historians, and philosophers. Up to ten years ago we had no trained anthropologists, but students drifted into anthropological research from all the sciences that I have mentioned here, and perhaps from others. With many it was the interest aroused by a special problem, not theoretical considerations, that decided their course. Others were attracted by a general interest in the evolution of mankind. The best among them were gradually permeated by the fundamental spirit of anthropological research, which consists in the appreciation of the necessity of studying all forms of human culture, because the variety of its forms alone can throw light upon the history of its development, past and future, and which deigns even the poorest tribe, the degraded criminal, and the physical degenerate, worthy of attentive study, because the expressions of his mental life, no less than his physical appearance, may throw light upon the history of mankind.

Even now the multifarious origin of anthropology is reflected in the multiplicity of its methods. The historian or the political economist who comes in contact with anthropological problems cannot follow the methods of the biologist and of the linguist. Neither can the anthropologist of our period fill the demands for information of all those who may need anthropological data. It might almost seem that the versatility required of him will set a limit to his usefulness as a thorough scientist. However, the solution of this difficulty is not far off. We have seen that a great portion of the domain of anthropology has developed through the application of the new historical point of view to the mental sciences. To those who occupy themselves with this group of problems, anthropological knowledge will be indispensable. Though the anthropological point of view may thus pervade the treatment of an older branch of science, and help to develop new standpoints, the assistance that anthropology renders it does not destroy the independence of the older science, which in a long history has developed its own aims and methods.

Conscious of the invigorating influence of our point of view and of the grandeur of a single all-compassing science of man, enthusiastic anthropologists may proclaim the mastery of anthropology over older sciences that have achieved where we are still struggling with methods, that have built up noble structures where chaos reigns with us, the trend of development points in another direction, in the continuance of each science by itself, assisted where may be by anthropological methods. The practical demands of anthropology also demand a definition and restriction of its field of work rather than constant expansion.

The historical development of the work of anthropologists seems to single out clearly a domain of knowledge that heretofore has not been treated by any other science. It is the biological history of mankind in all its varieties; linguistics applied to people without written languages; the ethnology of people without historic records, and prehistoric archeology. It is true that these limits are constantly being overstepped, but the unbiased observer will recognize that, in all other fields, special knowledge is required which cannot be supplied by general anthropology. The *general* problem of the evolution of mankind is being taken up now by the investigator of primitive tribes, now by the student of the history of civilization. We may still recognize in it the ultimate aim of anthropology in the wider sense of the term, but we must understand that it will be reached by coöperation between all the mental sciences and the efforts of the anthropologist.

The field of research that has been left for anthropology in the narrower sense of the term is, even as it is, almost too wide, and there are indications of its breaking up. The biological, linguistic, and ethnologic-archeological methods are so distinct, that on the whole the same man will not be equally proficient in all of them. The time is rapidly drawing near when the biological branch of anthropology will be finally separated from the rest, and become a part of biology. This seems necessary, since all the problems relating to the effect of geographical and social environment and those relating to heredity are primarily of a biological character. Problems may be set by the general anthropologist. They will be solved by the biologist. Almost equally cogent are the reasons that urge on to a separation of the purely linguistic work from the ethnological work. I think the time is not far distant when anthropology pure and simple will deal with the customs and beliefs of the less civilized people only, and when linguistics and biology will continue and develop the work that we are doing now because no one else cares for it. Nevertheless, we must always demand that the anthropologist who carries on field-research must be familiar with the principles of these three methods, since all of them are needed for the

investigation of his problems. No less must we demand that he have a firm grasp of the general results of the anthropological method as applied by various sciences. It alone will give his work that historic perspective which constitutes its higher scientific value.

A last word as to the value that the anthropological method is assuming in the general system of our culture and education. I do not wish to refer to its practical value to those who have to deal with foreign races or with national questions. Of greater educational importance is its power to make us understand the roots from which our civilization has sprung, to impress us with the relative value of all forms of culture, and thus serve as a check to an exaggerated valuation of the standpoint of our own period, which we are only too liable to consider the ultimate goal of human evolution, thus depriving ourselves of the benefits to be gained from the teachings of other cultures, and hindering an objective criticism of our own work.

SECTION A--SOMATOLOGY

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(Hall 16, September 23, 3 p. m.)

CHAIRMAN: DR. E. C. SPITZKA, New York City.

SPEAKERS: PROFESSOR L. MANOUVRIER, School of Anthropology, Paris.
DR. GEORGE A. DORSEY, Field Columbian Museum, Chicago.

SECRETARY: DR. EDWARD ANTHONY SPITZKA, New York City.

THE INDIVIDUALITY OF ANTHROPOLOGY

BY LÉONCE MANOUVRIER

(Translated from the French by Edward Anthony Spitzka, M. D.)

[**Léonce Manouvrier**, Director of the High School, Paris; Professor at the School of Anthropology; Director of Laboratory, Collège de France. b. Guéret, Creuse, France, 1850. M.D. Paris, 1881. Instructor in Anthropologic Laboratory of the High School, 1880; Assistant Director, *ibid.* 1899; Subdirector of the Physiologic Station at the Collège de France, 1900; Assistant Professor at the School of Anthropology, 1885; Professor, *ibid.*, 1887. Member of Biologic Society; International Institute of Sociology; Anthropologic Institute of London; Anthropologic Societies of Florence, Rome, Vienna, Berlin, Brussels, St. Petersburg, and Stockholm; Institute of Coimbra; Medico-Surgical Society of Bologna; General Secretary of the Anthropologic Society of Paris; President of the Physiologic Society (1904), etc., etc. **Author and editor** of about one hundred and thirty dissertations (in society or scientific reviews) on various scientific subjects.]

My regret at not being able to express myself in English would be more keenly felt by me had I foreseen the present circumstances, under which such great honor is conferred upon me. The belief that this great honor is bestowed, above all else, upon the anthropological institutions of my own country makes me none the less appreciative and grateful. The creation of these institutions represents one of those "hard beginnings," as you in America like to call them; one of those difficult beginnings which also signalized the origin of a great purpose, — the individualization of anthropology as a distinct science.

With the anthropological achievements of all countries of intellectual culture as a foundation, this great object was accomplished, little by little, in the space of half a century. Anthropology everywhere, under the influence of its own growth and of worthy practical examples mutually exchanged among the universities of the world, tends to acquire a special and definite individuality. Of these excellent examples, America has furnished to Europe a large proportion. Although there is promise of much progress in England, Germany, and other Continental countries, it would not be surprising very

soon to find the most satisfactory form of organization of anthropological science established in America.

For, after all, is it not here that the most favorable conditions exist for a rearrangement in accordance with the needs of the younger sciences? On the other hand, in those countries where so many scientific institutions, more or less old, struggle with each other, so to speak, for space and means, there prevail ideas which, if carried out even only in part, would seem chimerical. Prudent thinkers abstain from these by a sort of instinctive self-restraint, or else keep to themselves such daring notions whose very expression would hardly be tolerated in certain mediocre universities. Thus it is that every new science secures its proper place only after a certain period of time, — be it of longer or shorter duration, — which, in its history, constitutes a stage that may be termed its "hard times."

The fact that anthropology, during forty or fifty years, in France, passed through such a period, marks the momentous innovation involved in the rise of this science.

Anthropology has existed everywhere, not only for the past fifty years, but throughout the centuries as well. Human anatomy and physiology had been assigned to physicians under the title of medical sciences; ethnology was discussed by historians and philologists. A professor in the Jardin des Plantes, Paris, holding the chair of Mammalogy, could have assumed the anthropological title without being subjected to hostile criticism. Besides, a long time before, Kant had designated a part of his teaching at Königsberg by the term "anthropology," and several other writers had made use of the name, attributing to it a significance far more comprehensive than is ever implied at the present time.

In truth, the history of anthropology were not complete without reverting to the first positive notions concerning man. Nowhere are the aims and objects of anthropology more eloquently expressed than in those two words: *γνώθι σεαυτόν*. They express but a simple wish, yet it is a wish which reflects great honor upon the Greek philosopher, for it implies the recognition of that one requirement to which our anthropology should correspond in order that it may be precisely what it should be.

Thus it is that the study of man, necessarily approached from many sides and various points of view by physicians, naturalists, and philosophers, should be found broken up in such a way that even the progress of the various divisions seems to have become an obstacle to the formation of the integrality of its conception.

If a congress similar to this one at St. Louis had been organized fifty years ago, it is very doubtful whether among its 128 sections there had been a single one devoted to anthropology.

The science of mankind would doubtless have been distributed among several sections, in several departments. Ethnology, perhaps, would have obtained a distinct place in such a congress, and might possibly have tolerated some contributions in ethnic cranio-graphy from Morton or Retzius. A Huxley or a Boucher de Perthes might have had a hearing in some more or less anthropological section of philosophy, but surely not under the title of "Official Speakers."

How changed do we find the position of anthropology a decade later, still under an ethnological guise, but nevertheless permitting the introduction, with the study of the races, of the human species considered as a whole as well as in all its subdivisions, not even excluding the study of the individual. Moreover, this new plan of anthropological study could not thereafter be limited or distorted to suit the peculiar ideas of this or that author. The formation of autonomous and liberally conducted anthropological societies afforded an ample guarantee in this regard, and secured for the science of mankind that measure of extensibility which it should logically be permitted to enjoy.

And, after all, in a centre accessible to questions of all kinds relating to the knowledge of human beings, the comparison of such questions, it is self-evident, is favorable to the understanding of their mutual relations. In a pioneer society of anthropology this condition must, as with the other branches, expand beyond the original simple conceptions of anthropological science which its founders themselves had had. That is why the date of the foundation of this pioneer society should, in the history of the sciences, mark the actual beginning of the individualization of anthropology. I say the beginning because the process which I will endeavor to outline required time. Moreover, it is significant that these logical needs engaged a place suitable to their action, but they do not operate without friction of thought and of individuals ensuing. This is involved even in the very mechanism of progress, and one has grown familiar with the conflicts which thus result.

The creation of anthropological societies was a preliminary step, and relatively easy to take. Private institutions, dependent upon their own resources, are not to be considered with other institutions or with secular traditions.

Not even for the research laboratories or for the departments of instruction was the work absorbing enough, and therefore unlikely to become a profession. Hence it was an innovation which could not establish and maintain itself without passing through "hard times." Space and money were unavailable, and in the beginning already the needs seemed destined to increase. Mean-

while the newborn child-science just come into a family already of large number, the new individuality which had announced its presence by taking a seat at the "Banquet of Life," became the object of most gloomy reflections. Was there any need for a new science? At least, was it legitimate? The philosophers expressed their doubts and declared its demise highly probable — if not altogether desirable.

Controversies of this kind, at the time in which they arose, were extremely dangerous, because rebuttal could not then be made immediately.

But anthropology none the less continues effectively to manifest its individuality. The very fact that it could not find place in the university curricula only enhanced its importance and its novelty. Its affirmation alone signified widespread interest well worthy of the efforts put forth in its behalf. It is but just to put this fact in line with the anthropological work accomplished in France, and that — at least, so it seems to me — is why I so often hear foreign scientists give expression to their astonishment on seeing Broca's three institutions still piled up in the garret of this edifice. Their commiseration is free from the scorn felt in the contemplation of a cellar. But is it not with the cellar that a beginning must be made? Were this cellar without its superstructure, it would merely be a cave unfit for habitation.

To the unthinking let it be said that when they see anthropology comfortably established in its proper place in the curriculum of the new universities, or even when they see the older universities enhance the opportunities and means for the culture and spread of anthropological science, they ought not to forget that this progress had, somewhere upon this globe, a very humble beginning.

If I again lay stress upon the "hard times" of anthropology, it is to characterize better the phase which these represented in the evolution of the study of man, and better to show that this phase of "individualization" ought to continue in the broadest manner possible.

In its beginning in France, anthropology could not develop into complete form at one fell stroke. Had it not been for the moral support which arose in its favor, it could not have succeeded in maintaining itself on a parallel with the brilliant progress accomplished in the same field in foreign lands. A score of anthropological societies now exist, and there is not a large university which does not possess a laboratory for anthropological anatomy, albeit included in one of those anatomical institutes where human anatomy exclusively is fostered. All that is directly related to the study of man in such institutes belongs to the domain of anthropology, and if it appears otherwise it is due to the incompleteness of

the individualization of the science of man. It is a remnant of the very natural adherence of a pure science to the art from which it was in large part originally derived, and which, in its turn, owes to the former its principal progress. Withal, the pure science ought therefore to become as completely emancipated as we find anatomy to be, by way of example, in Oxford. As seen from the point of view of its medical and surgical applications, pure anthropology does not cease to be at all distinct from human anatomy. The applied science gains quite as much as the pure science, for that part of human anatomy which the physicians freely abandon to the anthropologists now is sure to be of great interest to the medicine of the future. But the other arts will share in this interest, and that is another reason why it will not forever remain restricted to the medical art, a necessarily restricted field.

In some universities, with reference to the teaching of the science, anthropology begins to find the special place of which it stood in need in the laboratories and chairs of anatomy. And while it is an important step, and the first great step, it is only a first step in advance.

To explain further, anatomy must necessarily and constantly introduce a considerable portion of physiology, just as the study of the bodily functions and their variations requires the anatomical point of view. As a direct study of function, physiology is therefore distinct from anatomy in that the development of physiological study, particularly of man, soon solicits for human physiology the same favor that has been accorded to human anatomy at Oxford. A twin establishment of this kind could well be called an anthropological institute. Nevertheless, it would still be incomplete, for physiology, in its turn, calls for the complementary science, psychology, and the latter pervades sociology. All these form a continuous chain, which of necessity is further complicated by the consideration of aberrant and abnormal cases, so numerous in the human species, and which are not solely of interest in the medico-chirurgical sense.

I cannot here discuss at length the questions concerning university arrangements which the individualization of anthropology would involve. I have said enough to show that it has only been begun and that its continuation will require much effort in its behalf for some time to come. The initial phase to which I refer stands in great need of amplification in a number of countries and under better conditions before its continuance is assured. Every advance, in anatomical anthropology, for example, will do more than help to perfect its own division; progressive developments of this kind would give evidence of the relations of that division with others not yet provided, and would also contribute to the

widening of the primitive conception of the anthropological domain. Each university, to begin with, establishes a single chair of anthropology, and its insufficiency immediately becomes apparent. The domain of anthropology is not only a vast one; it is so replete with varieties. In the teaching of anthropology by the incumbents of widely scattered chairs in European universities, it is also seen that the very diverse forms gain prominence in accordance with the special expert abilities of each professor.

When Broca opened his school with six chairs in 1876, this number soon appeared to be inadequate, and the creation of two additional chairs hardly sufficed to supply deficiencies which, from year to year, became more and more evident. Here, then, was something to appall the richest university in the world, were it an absolute necessity that an anthropological institute be put in possession of an organization fulfilling all the needs of the science. However, such is not quite the case. What is urgently needful is that ample space be reserved about the newly established institution for future development and expansion.

As the situation now presents itself, these needs are already great and very difficult to meet in the older Europe. Adaptations of a simple kind, and perhaps less costly than a newly created organization, however provisional they may be, would give considerable satisfaction. Especially should we avoid being deceived by the idea that the old universities or academies are, as a rule, unamenable to adaptation with the view of achieving the individualization of anthropology. The many difficulties to be overcome demand initiative and sustained effort. Initiative and effort can be aroused only by a clear idea of what is to be attained and of what importance it is. It is just such a clear idea and its more widespread appreciation which must be relied upon to remove the many obstacles as they arise or to foresee them as clearly as possible before they do arise.

How may such a clear idea be gained? Evidently by a study of the situation of anthropology among the sciences, and principally among the neighboring sciences of which it may at times seem to be but a superfluous duplicate. It stands to reason that if the reality corresponds to appearances, the individualization of anthropology would not be rightly understood; anthropology supplies a deficiency which it alone is capable of supplying. Hence the conception of its individuality appears, conjointly with the creation of sociology, as a most important event in the history of the sciences, and for that reason exerts an incalculable influence upon humanity's future.

This, gentlemen, is not a question to be submitted to personal judgment alone. It is a question of scientific philosophy in which

we may look for a rigid demonstration. The arrangement of the sciences and their mutual relations are logical results determined by the relations of things among themselves and with our reason. It is precisely on this account that the Congress of St. Louis claims a special and highly philosophic interest. In this Congress the sciences are rightly considered in the same manner as the facts pertaining to each are dealt with in their turn. The Congress is, practically, a convention of the natural history of the sciences.

Just as each science deals with the classification of the phenomena of matter and forces, so the philosophy of the sciences deals with the classification of sciences. Just as there are properties of matter and force, the recognition of which notably favors the introductory study of all phenomena or of all substance embraced in a known series, can we not also conceive of a series of the sciences possessing all of these general properties and containing a place reserved in some sort of way for anthropology?

As it is, the logical conclusion is the more clear that such series are but two in number, comprising all our knowledge of the universe, and that anthropology does not enter the same series more than the various sciences from which it is separable with difficulty. Moreover, these two series form a division so natural and well-grounded that, even in our day, and as it has ever since the beginning of the formation of sciences, it operates without constraint.

The double aspect under which nature is presented to our investigation determines this mode of classification. If we consider the natural phenomena by themselves, we obtain a knowledge of the general laws concerning the relations of phenomena among themselves. The various sciences, thus arranged, form a series of general sciences. This series, a natural arrangement which reviews philosophical history, represents (as Auguste Comte has shown) the sum total of our knowledge, in compact form, as seen from the purely ontological side. Such learning regulates the knowledge of beings, but does not suffice to constitute that knowledge.

In fact, we find that the phenomena of various kinds associate and combine themselves, in a manifold way, in beings of all kinds. In other words, there is much for us to know, for these complex forces act upon us, and, conversely, we are obliged to react toward them. So the knowledge of the simplest being requires the combination of many general sciences and a study suited to the particular nature of that being or object. That is why the series of general sciences required the recognition of our knowledge of beings in a complementary series, none the less indispensable than the former in the control of our reactions toward the environment.

In evidence thereof it may suffice to present a list of the arts,

together with these two series of sciences, each being placed in juxtaposition with those sciences which have specially contributed to their progress. This tabulation I published fifteen years ago,¹ but circumstances have not yet permitted me to develop the theme as fully as I had intended. It were superfluous, at this juncture, to point out, in justification of the existence of anthropology, its position among the other sciences, or the incapability of any other science to replace it.

KNOWLEDGE		ACTION
<i>of phenomena:</i> <i>General Sciences</i>	<i>of objects:</i> <i>Special Sciences</i>	<i>Arts</i>
Mathematics	Astronomy	Exact arts of engineers, builders;
Physics	Meteorology	Railroad construction;
		Navigation, etc.
Chemistry	Mineralogy	Manufactures, metallurgy, etc.
Biology	Geography and Geology	Agriculture.
	Botany	Zoötechnics
Sociology		Anthropotechnics(ology)
	Zoölogy and subdivisions	Medicine } Human
		Hygiene }
		Morals
		Education
		Law
		Politics

According to the order of decreasing generality and increasing complexity.

A. COMTE.

Just as sociology, at the head of the series of the general sciences, has assumed the study of the social phenomena, so anthropology, at the head of the special sciences, has all the more logically assumed the study of human beings. The importance of this fact is sufficiently indicated by the simple enumeration of the arts that are of especial benefit to mankind. Among these arts I only cite those which have for their chief aim the guidance and instruction of men, and which I have grouped under the name of anthropotechnology, in order to show their analogy with those included under the name of zoötechnology from the viewpoint of their relations with science.

¹ Classification naturelle des sciences; Position, programme et divisions de l'Anthropologie, Association française pour l'avancement des sciences, Congrès de Paris, 1889.

In our list of sciences, anthropology occupies but a modest place, since it only represents a subdivision of zoölogy. But the animal here dealt with is man — and the arts to be developed in this connection are those which deal with the actions, aims, welfare, and progress of the human race.

The table here presented requires little further development to show that the alleged "failure" of science in moral matters is only an indication of the comparative delay in the progress of the sciences capable of defining morals—as compared with the sciences which flourished the better because less complex.

The control of mankind never belonged to science, and, unfortunately, our race is not likely to become enlightened enough in this respect in the very near future.

As soon as conditions favorable to such enlightenment arise, a narrow conception of anthropology must be guarded against, for, I repeat, no other science deals with the special knowledge of human beings, and any misconception would impede or seriously cripple its individualization.

The individuality of anthropology is sufficiently defined by what I shall say concerning the two series of sciences; one dealing with the knowledge of various kinds of phenomena and the laws which govern them, while the other deals with the special knowledge of each being viewed in all its complexity.

What we call human somatology is nothing more than the study of the anatomical and physiological characters of the human species as compared with related species and of individual human beings compared among themselves. Human anatomy and physiology are essentially parts of anthropology in that they have for their aim the special knowledge of human beings. They are inseparable from each other, since they regard the human body and its functions not only from the purely phenomological viewpoint of the general sciences, but also from the viewpoint of the special knowledge of human beings.

This distinction, based upon the difference in the points of view, clearly does not invalidate the results acquired by studies of this kind belonging to anthropology, inasmuch as these augment the special science of man. Hence many anatomists and physiologists often make use of anthropology without knowing it, just as many researches principally taken up with an anthropological purpose can and do contribute to the progress of anatomy and physiology considered as general sciences. It may even be said that such researches, while ostensibly appearing as new problems in the field of the general sciences, always contribute to anthropology. Because of the special importance which is attached to the smallest details of the human structure and its physiology, as for example

the hardly discernible differences which give rise to innumerable varied physiognomies, and also because of the enormous multiplication of different morphological and physiological series of human characters which almost constitute a new category of phenomena, the special study of man presents a singular interest for biology.

The relationship between human somatology and anatomy combined with physiology — in one word, biology — ought therefore, it seems to me, to be free from all obscurity.

The relationships between anatomy and psychology as well as with sociology are quite analogous, if not quite similar. Perhaps the only difference lies in the fact that, while biology might be slightly reduced if deprived of its phenomena, these phenomena would enrich psychology, and sociological phenomena are, for the greater part, exclusively human.

Psychology and sociology are fully within the bounds of the science of man. As with human anatomy and physiology, they are equally affiliated with anthropology in so far as they greatly share in the special knowledge of human beings. Strictly speaking, human psychology and sociology are distinguished from anthropology in so far as they deal with the human soul and with human society from the point of view of investigations of the ontological laws. To anthropology belong only those psychological and sociological facts which may be considered as elements of the special knowledge of human beings. In this relation, as with all others, the anthropologist makes a study of characters; that is to say, of differences which are interpreted in the light of the general sciences.

Although there are no societies other than human societies, there is still, in the study of social phenomena analyzed according to sociological laws, material that is separable from anthropology. Human societies, in fact, possess an organization and functions which permit of their being considered as veritable super-biological organisms endowed with a life and evolution distinguishable from the life and evolution of the elements which compose them. They are none the less human productions. The interdependence which exists among them and the individuals of which they are formed is intimate enough so that the differences in time and space which they present constitute veritable anthropological characters.

Let it be understood that these distinctions in no way imply a belief in a corresponding partition in nature. There is no need to make numerous divisions, but rather to create order in our methods of investigation and in our knowledge. The two categories of the sciences arise from the logical necessity of taking two different points of view, or, if you will, the study of nature in two directions in order to obtain knowledge according to our needs. Human

sociology completes our knowledge of man without being included in anthropology, for it is differentiated in so far as it is a phenomenological study; that is to say, in so far as it is an investigation of the laws governing a particular kind of phenomena.

This completes my statement with reference to the place occupied by sociology in its relations with anthropology in my memoir of 1889 cited above.

Despite the impossibility of introducing here any detailed development, it is seen that the relations of anthropology with the neighboring sciences no longer present any difficulties if we take for our basis of argument the general classification of the sciences and the logical necessity which has given place to the division of the two sciences in two series whose relations remain constant from first to last.

So we find the individuality of anthropology guarded from straying out of the path of progress. This I will show further in my concluding words.

Anthropology concerns itself purely with anatomical, physiological, psychological, and sociological differences. When we consider the human species as a whole, or the races, sexes, or any categories whatsoever, or finally the individual, the special study of human beings always consists in a differentiation from various points of view determined by the different kinds of phenomena which these beings present. That is to say, from the quadruple anatomo-physio-psycho-sociological point of view. Such is the individuality of anthropology.

Hence we now see why the conception of this individuality is of such extreme importance. Here again I base my demonstration upon the facts which have determined the formation of the two categories of sciences; for all the special sciences are the result of an individualization similar to that which anthropology ought to possess.

The characters presented by all kinds of beings are not isolated from each other. There are interconnections, interacting influences and correlations whose study is indispensable in the acquisition of knowledge worthy of the name and helpful to our purpose.

Minerals, for example, present characters of geometrical, mechanical, physical, and chemical kinds. But neither geometry, mechanics, chemistry, nor physics can replace mineralogy; first, because each of these sciences has purpose totally different from the knowledge of minerals, and interests itself in it only so far as it may profit thereby; secondly, because each of these general sciences does not regard, and is not capable of regarding, a mineral from any other than one point of view; thirdly, because the various kinds

of characters are combined in the mineral in certain ways which determine the specific properties of that mineral.

To obtain a suitable knowledge of such a mineral therefore requires a special and concrete study adapted to the complex nature of the object to be investigated. The mineralogist applies his geometrical, mechanical, and physio-chemical knowledge, together with the perception of relations and position. In order to acquire knowledge concerning such a mineral adapted to its particular and complex nature, to learn its special characteristics as compared with other minerals, and to understand its uses as well as employ it usefully, this combination of the concrete sciences is absolutely necessary.

It were distressing to imagine a mineralogy whose individualization were as incomplete as it yet is in the case of anthropology. Were such the case, we might find mineralogists relinquishing the study of crystalline forms to the geometricians, or, in order not to infringe upon the rights of the chemist, to avoid the study of the chemical composition of minerals, and so on.

I do not believe that such freakish doings will ever occur in mineralogy. We cannot be as sanguine in anthropology, especially if the intimate relations which exist between somatological characters and the mental makeup are misunderstood or overlooked. An incompletely individualized anthropology would no more deserve the name of science than would a mineralogy devoted merely to the consideration of mineralogical characters. A human category or a human being represents a complexus of several kinds of phenomena, and this complexus must be differentiated from analogous though not similar complexuses. Furthermore, not only must these differences be noted, they must also be explained. Without such interpretation there may exist museums or even chairs of anthropology, but not an anthropology; not that anthropology which answers to the mandate *γνώθι σεαυτόν*, and from which, together with sociology, the anthropotechnical arts await the light of which they stand so greatly in need. Without this scientific light the intense efforts of societies against moral progress would amount to a futile and perhaps dangerous movement. At the basis of every social question, anthropological problems will be found, but we know how valueless the immature responses of an incompletely organized anthropology are.

In short, it is the anatomical point of view which is neglected or limited to the consideration of characters which are of no importance physiologically; it is the psychological point of view, or even the sociological one, as if there were not the most intimate relations between the physical conformation and the intellectual or moral characters, or even as if the latter bore no relations to

social or other environmental conditions under which mankind developed.

When we consider the sexes, the races, the social castes, the criminals, or other classes of mankind, this alliance between the somatological, mental, and social viewpoints ought never to be forgotten. All this is comprised in the nature of things, and it must also be comprised in scientific study.

Through its practical organization in various and more or less perfect ways, anthropology could realize that individualization which is its desideratum. The theoretical realization of this individuality on the part of all anthropologists is of the first importance, and dominates the question of its organization and the arrangement of its subject-matter.

THE PROBLEMS OF SOMATOLOGY

BY GEORGE AMOS DORSEY

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WITHIN a radius of a mile of the meeting-hall of this Congress are representatives of perhaps half the types of mankind. Indeed, it has been the aim of this Exposition that it should be an exposition, above all else, of mankind, and the study of mankind constitutes the subject-matter of anthropology. We may survey the collective exhibit here assembled of man and his works, from one of three viewpoints: First, we may note that certain types differ from us in color, character of hair, perhaps in the proportions of the limbs; indeed, their whole physiognomy seems to be built on a plan different from ours. This, then, is the point of view of bodily structure, or of somatology. Secondly, the majority of the types of mankind here represented speak a tongue foreign to our ears. This is the point of view of language, or of linguistics. In the third place, these types have a method of thinking, acting, and doing different from ours. They wear strange garments, use strange tools, live in strange habitations, in fact, their whole material life is different from ours. This is the point of view of culture, or of ethnology. These, then, are the great subdivisions of the study of mankind, or anthropology: somatology, linguistics, ethnology.

It should be noted that the boundaries of these three divisions of anthropology, with their aims, methods, and results, are not necessarily the same. Thus, continuing our survey of the types here represented, we may observe that while certain groups of individuals speak the same language, they are not of the same physical type; and again, we may observe that, though certain groups of these peoples are practically in the same state of culture, they differ widely, both in physical type and in language. In other words, although the study of mankind may be approached from three distinct points of view, the aims, methods, and results of any one will be generally distinct from those of the other two. Hence, should we attempt to classify the people here represented, which for present purposes may be regarded as representative of mankind,

our classification would differ, accordingly as it followed one or another of these three methods. This fact does not necessarily mean that our classification according to the one or the other is not right. That this contradiction is inevitable is at once apparent when it is remembered that the laws governing the preservation of somatic types are not the same as those which govern the preservation of languages or cultures, and furthermore that language and culture are not transmitted, nor is their development uniform. When we classify according to language, we may make fine distinctions and note historic changes, but not the same classes of facts in the early history of man are thereby discovered. The combination, then, of the three methods of somatology, linguistics, and ethnology all make up the general study of mankind, and all must contribute their share to the solution of the great problem of anthropology, which has for its ultimate purpose the comprehensive study of mankind and his history. In this great problem the determination of the different types, languages, and cultures of men in different parts of the world, and the explanation, if such be possible, of the reason for the occurrence of these different types, languages, and cultures, are of fundamental importance.

It is my purpose to discuss those problems of the history of mankind that relate to the physical structure of man, or somatology. But before passing to the direct consideration of the problems of somatology, I cannot forego the opportunity to call attention to a fact which is so strikingly brought out in this great Exposition, and which is being even more satisfactorily proved as this year draws to a close, — the fact that no longer may we speak in derogatory tones of the so-called "lower races," implying thereby that they are less removed from the animal kingdom, and are deficient in certain faculties which, until recently, it has been assumed were the exclusive property of the white race. For this advance we are especially indebted to the researches of Boas, who, in a logical and convincing manner, has pointed out that faculty is not dependent upon race. Thus, as Boas has shown, color and character of the hair seem to distinguish the Africans from most other races; yet in America we find a dark skin and lips and nose which much suggest those of the continent of Africa. Then, it must be noted, that differences which at first seemed great, on examination are found to lose their effectiveness when correlation of growth is taken into consideration; for when this is done, the proportions of the body as found among the various races show differences comparatively insignificant. In fact, as has been shown by Ranke, many of the proportions of the so-called "lower races" are more characteristically human than those of the whites. In this connection it should also be noted that not descent alone, but the mode of life determines the proportions.

We therefore find differences in peoples of the same race, which are comparable to those which distinguish wild from domestic animals. Anthropometric measurements made among college students have also shown that measurements which are affected by the condition of the muscles, change in accordance with the development of the muscles during practice. Hence differences of this character brought out during childhood and continued into adult life may result in differences of structure, and these differences are so functional that they do not belong to race; nor may they be interpreted as placing one race lower than another, for they are cultural.

Many anatomical peculiarities which have been spoken of as theromorphisms may be due either to heredity or to malnutrition. Such is the *os incae* characteristic of certain regions of Peru and of the southwest; the *torus palatinus* characteristic of the Laps; the small nasals accompanied with synostosis, with the maxilla and the prenasal fossa, and the more important variations of the arteries and the muscles. Certain other anatomical peculiarities, such as the peculiar disposition of the frontal, parietal, and temporal bones so as to form the figure H seems to be due to malnutrition, while a platynimic condition of the tibia has been shown by my distinguished colleague to be functional rather than racial. We may take finally a single other anatomical feature, that of facial prognathism, often spoken of as characteristic of the so-called "lower races." It must be admitted that the forward projection of the maxilla of the Negro is more nearly typical of the apes than are the maxilla of the Europeans. At the same time it must be noted that this condition may be considered among the Europeans as an arrest of development, and hence indicative of a higher development; but the broad and flat nose among the Negroes, a condition found in white children and variable in adult whites, may also be regarded as an arrest of development; but in this case the arrest of development may not be interpreted as indicative of a higher development. Hence it may be stated that the arrest or superior development of a feature simply expresses a direction of development. It seems that, as mankind has developed along the same general lines, certain peculiarities have remained stationary in some races, and thus may be said to show an arrest of development, while in others some feature has been strongly developed. Thus as characteristic of the Australian may be noted the great development of the frontal sinuses; of the Negroes, facial prognathism; and of the whites, the high and the narrow nose. It may be concluded, therefore, that no one race is anatomically more ape-like than any other, or more highly developed. Hence we are not justified in speaking of those races as lowest which differ most widely from ours. More than once the Negro of Africa has proven himself the equal, if not the superior, of the white man, anatomically,

while the exhibits of the Japanese in this Exposition and their success in the field of arms during the year have marked them truly the equal of any whites now living. Surely it is time that the white race recognized the fact that anatomically it is not superior to the other races; that its seeming superiority is due to a fortunate series of circumstances extending over thousands of years, and that equally favorable circumstances are likely to arise in the future which will make it possible for a race other than the white to assume a dominating position.

Upon the grounds of this Exposition are representatives of many peoples of Asia, of Africa, of Europe, of many of the Islands of the Pacific, and of America, from the Eskimo of the northern extremes to the Patagonians of the south. How are these people related by blood? What relationship does the Eskimo sustain to the Patagonian? Why is the color of the skin of the Negro black, and why does it remain black? Why is it that any one tolerably conversant with the peoples of the earth may distinguish at a glance a native American from a native of any other people in the world? These are some of the problems of somatology, and the great fundamental problem of somatology is the determination and definition of different types of man in different countries, and, if it be possible, the explanations of the causes of these different types. The problem, then, is largely one of classification, the object of classification being to establish types of the varieties of mankind. As has already been said, this classification is not based on language; nor is it based on ethnology, but it is based on the blood relationship of the different types. The great advantage secured by this somatological classification will be along the direction of the reconstruction of the history of the origin and mixture of human types, and even possibly the establishment of certain types which will be found to have remained permanent during a very long period of time. Again the problem may be defined as an investigation into human characteristics which will enable us to determine, first, the types of mankind in every part of the world, and, second, to group these types into races. We may first consider the classifications of the races of mankind which have been presented up to the present time; secondly, the methods or criteria which are applicable to and form the basis of the determination of types and the classification of races.

In the brief historical review I am about to make of the various schemes of classification which have been proposed for mankind, it may be stated at the outset that certain problems which formerly engaged the serious attention of somatologists may now be assumed as settled, or of such nature as to warrant postponement of their solution pending the accumulation of further data. That man

forms a single genus, and a single species, is, I believe, no longer questioned. Hence modern classification recognizes varieties or races of a single species. This very fact has constantly been a source of difficulty; for man has never separated so far as to form true species according to the physiological definition. On the other hand, the other members of the animal kingdom have not only differentiated into species and thus have often remained isolated, but have further broken up and formed new species. The races of mankind have always been, so far as known, fertile, and new varieties have been formed, not only by the segmentations of one of the old stocks, but by combinations of those already established. There has always been present, therefore, in classifying mankind, the difficulty of drawing boundaries which would be universally acceptable. Another point which may be assumed as settled is the fact of man's enormous antiquity. This is held to imply that in his very earliest history he rapidly spread over the earth, where, in the various great geographic provinces racial differences slowly developed, and in groups especially isolated peculiarities were developed along special lines or in special directions. Nor is there any longer question of the main great facts of man's ancestry; for with the advances in somatology, comparative anatomy, embryology, and paleontology, man's place has become fixed with the belief in the fundamental unity of all organic nature.

Although Tyson in the seventeenth century anticipated much which was not until long afterward discovered, concerning the comparative anatomy of man and apes, it remained for Linnæus, who has been called the father of the descriptive natural sciences, to propose the first scientific scheme of classification of mankind into races, the basis of his classification being geographic. He distinguished the American, the European, the Asiatic, and the African. In this connection it is interesting to observe that, although the extent of somatological observations was at that time very limited, Linnæus recognized apparently the fact that geographical position, that is, continuity of place, should never be lost sight of in classification. It is also to be noted that in this classification, as indeed with many classifications which follow, the basis was according to the general appearance, including color of the skin, form, and color of the hair and eyes. Closely following Linnæus was the classification of Blumenbach, who did for man what Buffon and Linnæus did for the animal and plant world, in which the basis still remained geographical. The races according to Blumenbach were the Caucasian, Mongolian, Ethiopian, American, and the Malayan. While Blumenbach's classification is based upon somatological peculiarities as well as upon a geographic basis, it has the great merit of having stood the test of time better than any other of the earlier schemes of classi-

fication. As has been pointed out by Ehrenreich, the five great races which he recognized actually existed. Nor did he divide races which belonged together. It may be noted, however, in passing, that the anthropological position of certain blacks in India and of the peoples of Australia, which have sorely puzzled somatologists, were not known to the science at that time. Above all, it must be noted that Blumenbach's system was based on scientific observations in which the form of the face entered for the first time.

Following Blumenbach's classification was that of Cuvier, who recognized but three great races, namely, the Caucasian, European, and the Mongolian, the basis of classification being the color of the skin. In this classification Cuvier readjusted the races so as to include within the Mongolian the Malayan and American, which two were thought to be inferior by Blumenbach.

In considering the later history of the schemes of classification it is not necessary to follow a chronological order; nor is it advantageous at this time to consider, even briefly, all of the schemes proposed. As a matter of fact, classifications which follow were modifications either of that of Linnæus, Blumenbach, or Cuvier, each modified by the peculiar point of view taken by the observer. One of the earliest and the most important of the later students was the Swedish somatologist Ratzius, who in 1840 proposed for the first time the cephalic index, and who classified mankind according to their heads as long or short. With this, the beginning of craniometry, many somatologists came forward from time to time, each, by some new scheme of measurements, proposing to solve what heretofore had seemed incapable of solution. With the contribution of Kemper, Lucæ, Broca, Welcker, von Torök, Sergi, and von Holder, each adding a new and often important addition to metric methods, the solution of the problems of classification seemed more and more near. In the mean time skulls and heads were measured by the countless thousands, but none of the methods proposed stood the test, for it was found that craniology, instead of solving problems, complicated them. As a result craniology fell into ill repute; and it was right that it should, for the determination of types and races of mankind is not to be done with only the calipers.

Without considering further the history of classification, it may be stated as a fact that probably no three classifications which might be proposed by the ten most prominent anthropologists living to-day would be found to coincide. The reason for this is perhaps due in large measure to the fact that neither the basis of the classification which the ten might thus propose would agree, nor would their criteria of what constitute a race be identical. It may therefore be profitable to consider for a moment this aspect of the

question. Terms which are indicative of divisions according to linguistic or ethnic bases are too often confounded or confused with those which relate to the somatological side of the subject. Thus, the terms tribe, stock, nation, are in reality based on continuity of language. With such terms somatology is not concerned. When a number of individuals, each with his own individual variation, differ sufficiently from their neighbors that they may be distinguished by means of well-marked and easily recognized peculiarities, we may speak of them as a type. When we find a group of such types all having something in common and all occupying a geographic continuity of habitat and all having a similarity of anatomic traits which mark them from all other groups of mankind, we may speak of such a group as a race. We may therefore define races as the principal divisions of mankind, and types the varieties of these main divisions.

Such being our definition of race, we have certainly at least five races, the Caucasian, including peoples of the north of Africa, the African, the Mongolian, the American, and the Oceanic. Probably to be added to these should be the Australian, and possibly the Papuan. In considering in a general way the characteristics which indicate this classification of mankind into six races, we are at once brought face to face with the idea expressed by Topinard, who says that people alone are real, types and races are conceptions. In other words, Topinard denies the objective existence of races, and maintains that the term is an abstract definition. Thus he would define the type as an abstract picture, from which we form the ensemble of characters expressed in a group, or, again, the type of a group is the ensemble of characters which are attributed to a type and which distinguish it from other types. Topinard further insists that continuation in time constitutes one of the chief characteristics of the race. Actual types exist at the moment when they are determined, and to prove the reality, that is, the objective existence of a race, it is necessary to determine both the type, based on a wide complexity of marks, and the proof of the continuation in time of the descent or relationship in blood.

Enough has been said to indicate the character of the requirements which shall determine our classification of mankind into races.

We return to a more definite consideration of our main theme. The great problem of somatology has already been defined. It remains to consider the details of the problem, noting the methods applicable in the solution of them.

What are the races of mankind? What are the types, the composite pictures which represent in the abstract the picture of these combined types? Above all, what are the causes which make types and races? It would seem that two great factors have been at

work in determining the trend of man's development since his appearance on earth. First is heredity, which, according to Brington, decides the individual's race and trend and potentially inclines, if it does not absolutely coerce his tastes and ambitions, his fears and hopes, his failure or success. Second, geographic environment, which works by modifying individuals, and hence types and races. The potentiality of either of these two factors is not yet known, and these are two of the great problems of which a solution will be of utmost importance not only in determining the classification of the races of mankind, but in helping to solve that much more interesting problem of the explanation of races. For the solution of both the problem of heredity and of environment, new and more extended observations are required, these observations to be made with the direct purpose of investigating the subjects at issue. Are we to look to external conditions or to the transmission of individual peculiarities as the predominating factor which is to determine the division of mankind into varieties? The problems of the origin of man, formerly so much debated, apparently will solve themselves when we have determined the solution of the problem as to the reason for the existence of races. Certain of the problems of somatology may also be said to have a bearing upon the future of mankind. Thus we may not lose sight of the fact that man is exterminating not only lower animals, but that he is to-day exterminating certain of the lower races, and it is certainly worth considering what the effect on mankind will be of the exterminating going on to-day at such a great rate among the Javanese, the Papuans, the Maori, the Marquesans, the Australians, the Hawaiians, and many, if not the majority, of the native tribes of India, Australia, North, Central, and South America. "If," as Hall has said, "an ounce of heredity is worth a hundredweight of civilization or schooling," is it making for progress of mankind that this extermination is going on so rapidly? Is it a problem for the somatologist to consider what would have been the result for the future of mankind if the powers in 1840 could have agreed upon terms and have divided up Japan? Is it a problem, or is it simply a fact, which we cannot change if we would, that the highest representatives of our boasted civilization to-day are actually not reproducing their own numbers; that the progress of the white race is making for its own overthrow and final extermination? It is easy to propound similar questions of grave import, touching upon the future of mankind, especially upon the future of certain races, but it seems doubtful at best if a solution of such problems will result in actual benefit. The great problem of the future of our commonwealth seems to depend largely upon the solution of certain fundamental questions of somatology, such as the effect of the mis-

cegenation of races, the future of the black race on this continent, and above all the problem of the possibility of the acclimatization of the white race in the tropics. Such problems, apparently belonging to the realm of somatology, must rather be considered by the statesman, who, indeed, may with profit apply for data to the somatologist. The pure problems of somatology are racial: the determination of the physical classification of the races of mankind, their origin, development, and explanation. Other problems which are to have great influence upon the future of the race have to deal with the causes of heredity and environment which may make for a higher physical type, and indeed in this problem enters the question as to what constitutes the highest physical type, whether it be stature, size of the brain, perfect adaptability to an upright gait, color of skin, range of vision, acuteness of hearing, or sensitiveness of taste and smell.

What is the material available and applicable for the solution of some of the problems which have been proposed, and what of the methods which will best record, and especially contribute toward the ultimate end of the solution of the problems of somatology? The study of the races of the earth has been most extended, but nevertheless has not been exhaustive. While anatomic observations and somatological data for many peoples in North and South America and for great portions of Europe, and certain islands of the Pacific, are available, yet even such observations, when we consider the magnitude of the problems involved, fall far short of the requirement. Observations of the internal anatomy of the races of mankind are so scant as to be up to the present time almost worthless in forming any extended deductions. Measurements of skulls and skeletons have been made by the thousand, and upon representatives of practically every type on the globe; but it is only recently that the value and especially the correct method of making such observations have been determined, and it therefore becomes necessary not only to remake many of these measurements, but to extend the work in a more systematic and far-reaching manner. Of the causes and extent of influence of the two great factors already alluded to, namely, heredity and geographic environment, but little progress has yet been made, although recent investigations of Galton and Pearson have opened up new paths in the study of heredity which are bound to throw much light upon the problems which demand investigation. Again, observations relating to the investigation of the laws of the admixture of races are still very scant, and the observations which have so far been made are so few in number and of such a desultory character and cover such a brief period of time as to be only of value as indicating in a general way what we may hope to learn

from a more carefully conducted series of observations. In another field from which great light may be expected, — namely, the investigations into the laws of growth, much has been done, especially by Boas and his collaborators, relating to the laws which determine the rate of growth of children, yet the problems of far-reaching importance are almost entirely without means of solution. The need for observations on this subject is most important and pressing, and in such observations should be included full data relating to mortality, nutrition, and occupation.

What, finally, we have to ask, are the criteria, or rather the methods applicable for the solution of the fundamental problem of somatology? As already indicated, general appearance, such as form, color, etc., sufficed for the first classification of mankind. Later these general observations were supplemented by studies on the skeleton, especially the skull. The ease with which the skeleton could be studied and the fact that our knowledge of extinct races was based entirely upon the skeleton led to the great development of the application of the metric method, and embraced within what is usually termed craniology. The ease with which such methods were pursued, and the infallibility, as was first supposed, of the results of such investigations had a tendency to increase enormously the number of measurements taken, and this led to an almost total disregard of systems other than the skeleton in the study of the anatomy of man. So eagerly was the metric method pursued that it may be said fairly to have gone to seed, and the result was such that no less eminent somatologist than Ehrenreich questioned whether the methods of craniology were worthy of serious attention. Nevertheless it is true that craniology has proved, and will prove to a larger extent, when used properly and intelligently, of the very greatest assistance in defining types, although apparently it is destined not to play an important part in the classification of those larger groups of mankind which we call races. It must be admitted also that up to the present time the metric method has discovered no criteria which will enable us to distinguish individuals of one race or type from those of another. Hence the claim has been put forth that the characteristic features of types were not stable; that they were influenced to such an extent by both geographic and social environment that the results derived from craniology were not trustworthy. As a matter of fact, it is not the fault of the method, but rather the lack of a sufficient amount of observation which, up to the present time, has made it impossible for us to give an accurate and exhaustive description of the somatological characters of groups of individuals from one locality which will enable us to identify them without difficulty. Metrical data, the observations

being recorded properly and with due deference to the laws of the correlation of growth, will make possible a graphic representation of the distribution of forms in certain groups which, hence, may be characterized, and thus the subject may assist in a most material manner a classification of types. In connection with the use of this method, however, it must again be insisted that before it will yield the greatest good, and especially before we may draw conclusions which may not be controverted, it is necessary to solve the problem as to whether muscular and social development modifies individuals or whether their physical structure is due primarily to heredity. While, as already pointed out, it seems highly probable that social or geographical environment may and does influence muscular development, which in turn exerts a certain influence on the skeleton, yet never great changes of form result. On the other hand it has been shown by Galton and Pearson that heredity is the chief factor in accounting for the physical characteristics of the individual. Only upon such a supposition, as Boas has pointed out, may we account for the types found in the northwestern area of the United States, where we find a similarity of geographic and social environment, but diverse and easily recognizable physical types. Nor can we account for the distribution of types in Europe except upon the belief that heredity has been the chief factor. The data afforded by metrical observations must therefore be regarded as supplementary to a verbal discussion which at best is often vague. Furthermore, the measurements used should be such as to contribute to the solution of the problem at hand. This use of measurements to supplement verbal descriptions by defining more sharply certain peculiarities will prove of the greatest value, but the measurements should be selected with this end in view. In other words, the methods pursued in metrical investigations should have a biological significance. It is to be noted also that the averages have not an equal value with that of tables wherein measurements are so arranged as to show frequency of forms in the group or groups under consideration. With such a view we are able to see at a glance the distribution of forms, and thus determine the variability of the group. From this knowledge we may arrive at an idea of what constitutes the prevailing type, thus furnishing an idea of the degree of the homogeneity and permanence of the type. Observations thus made have additional value, for they contribute toward the solution of certain problems, such as the tendency of distinct types to persist, even though they have been crossed. Further analysis of the distribution of measurements will afford the means of comparing the types of adjacent geographic areas, and help to determine the blood relationship of these types, and hence ultimately

the blood relationship and consequent origin of races, and finally of mankind itself. This extension of the metric method, however, implies and emphasizes the need of a much more extended observation, the lack of which delays our knowledge of the distribution of types among the great races; and hence we return once more to the fact that to ascertain the distribution of the types and races of mankind is the fundamental problem, embracing in its scope all problems of somatology; and this problem requires immediate and earnest attention and widely extended investigation.

SECTION B — ARCHEOLOGY

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(Hall 16, September 24, 10 a. m.)

CHAIRMAN: PROFESSOR MARSHALL H. SAVILLE, Columbia University.

SPEAKERS: SEÑOR ALFREDO CHAVERO, Supervisor of the National Museum, Mexico.

PROFESSOR EDOUARD SELER, University of Berlin.

SECRETARY: PROFESSOR WILLIAM C. MILLS, Ohio State University.

ARCHEOLOGY AND ITS RELATIONS TO OTHER BRANCHES OF SCIENCE

BY ALFREDO CHAVERO

[Alfredo Chavero, Attorney, Member of Congress, Treasurer of Congress, Comptroller of the National Bank, Member of the Permanent Arbitration Court at The Hague, Supervisor of the National Museum, Mexico City, Mexico. b. City of Mexico, February 1, 1841. Formerly Professor of Administrative Law in School of Commerce; Member of the Commission that formed the Commercial Code; Director of School of Commerce; Director of the College of Peace; Governor of Federal District, 1871; Sub-secretary to the Minister of Foreign Affairs, 1877; President of Congress at various times; Perpetual secretary of Geographic Society; and Director of National Museum, 1903; Member of Geographical Society of Mexico; Mexican Academy; Academy of Legislation and Jurisprudence; American Antiquarian Society; American Anthropological Association; Association of Archeologic Art of Barcelona, etc. Author of *Historia Antigua de Mexico*; *Pinturas Jeroglificas*; *Apuntes viejos de bibliografia Mexicana*; *Los dioses astronomicos de los antiguos mexicanos*; and various other works and papers on the history and archeology of Mexico.]

THE Organizing Committee of the International Congress of Arts and Science appointed me to deliver an address on archeology in its relation to the other sciences. The honor conferred on me was so great, that I could not but accept. I intend therefore to speak on this interesting subject, laying special stress on Mexican archeology.

Archeology is generally considered as a science of curiosity, and bringing no practical results. The common belief is that it only arises from the wish common to every people of knowing its past. Each people would know whence it has come, just as man strives to learn who his forefathers were. In spite, however, of this belief, every day sees a greater increase in archeological studies; and the nations of the world to-day — especially those which enjoy a more advanced state of civilization — undertake nothing which is not useful, and which does not produce practical benefits. And we may ask ourselves, what can these be in archeology? The answer will be found in the study of its relation to the other sciences and arts.

No one can possibly deny the priceless services bestowed on history by archeology. Primitive man had no other means of recording his history than oral tradition. With the advance of time this latter necessarily underwent a process of adulteration; and legend then took its place, at first quite comprehensible, but later on confused and unintelligible. Even the nations who were able to form a system of writing, and left us a record of their acts, whether in documents or in sculptural inscriptions, as they disappeared, took with them the key to their history, leaving behind in the memory of man but faint recollection of their former glory. The study of their documents, heretofore incomprehensible, and of their inscriptions, the fruit of endless toil, came to supply what was lacking in their vague traditions: and in certain cases, such as Egypt, to produce a true history. Archeological investigations often succeeded in elucidating legends, leaving in their place historic facts. The excavations in Crete are teaching us the Hellenic origins; while the exploration that is being carried on at Abydos, Troy, Babylon, Nineveh, and other famous places in the East, are now shedding the first beams of light on the darkness of those past ages. And so, thanks to archeology, humanity's real life is being deciphered. Archeology should take its place in the front rank of the most advantageous sciences, solely through this priceless service, which satisfies man's zeal in his search after the knowledge of his past, so that he should not feel that he had been born into the world without antecedents, like the tree which springs up all alone on the immense plain, or like the stone torn from the mountain side as it rolls down in its solitary flight.

No more fitting expression could be found for this all-important object of archeology, than the words of M. Babelon, when speaking on the monuments of Suse. "A new chapter in the history of humanity," he has said, "has been opened and is about to be written, as a consequence of the archeological discoveries in Persia." And to this I add that archeology will eventually write every chapter of that great book, the Bible, of the history of man all over the world.

So far as Mexico is concerned, the benefits derived from archeology have been most advantageous. It affords me great pleasure at this point, to express publicly our debt of gratitude to those great scholars of different nationalities, who have by their studies enriched our history, names like Putnam, Holmes, and Payne; the Count of Charencey, Seler, and Förstemann; Cyrus Thomas, Mrs. Nuttall, and Miss Fletcher; Maudsley, McGee, and Goodman; and a countless host of others which it would take too long to enumerate.

The ancient Mexicans and the other peoples, especially the former, who prior to the conquest occupied the territory of Mexico as it is

to-day, had more abundant sources for the formation of their history than did many of the nations of the Old World. Dating from the very first years of colonial administration, we have several monks who devoted themselves to writing it, such as Motolinia, Sahagun, and Duran. Their method of work, as Acosta and Sahagun tell us, was to gather around them all the Indians who had any particular knowledge of the subject. These latter related to them the facts as they had been verbally handed down from generation to generation; as the custom was in the sacred colleges called *calmecac*, to form the history, making the pupils commit it to memory, so that these should in their turn hand it on to the succeeding generation.

Thus was it possible to write the history of the Aztecs in its exactness of detail, beginning with their pilgrimage, until the arrival of Cortes. Not only the first monks, but native writers as well, such as Tezozomoc, Chimalpain, and Castillo (this latter wrote in Mexican and must be regarded as an Indian), were the authors of important chronicles. In some cases they were lineal descendants of the kings themselves or of high personages, and so had at their disposal the family traditions and what remained of the hieroglyphical archives. The works, therefore, which they produced are of a most important nature, such as those that Pomar and Ixtlilxochitl wrote on the Kingdom of Texcoco, and Muñoz Camargo on the Republic of Tlaxcala.

In local reports, such as those written by order of Philip II, and which towards the end of the sixteenth century constitute a detailed statistical work of New Spain, not possessed in those days by the most enlightened nations of Europe, and in the chronicles of the convents of different towns, historical facts of great importance, gathered together by tradition, lay scattered. These facts, collected by Burgoa for the Zapotecas, La Rea for the Michoacas, Pérez Rivas for the Northern Provinces, Remesal for Chiapas, and others, furnish us with valuable historical data.

And yet, in spite of so many elements, our ancient history would have been incomplete, had not archeology come to its aid.

To begin with, the study of the hieroglyphical codices, as they were deciphered step by step, has taught us much. The Band containing the Aztec pilgrimage has now settled the number and names of the wandering peoples, when and why they seceded, the course of their journey, the settlement and defeat of the Mexicas at Chapultepec and how they were later driven from Culhuacan: while the map of this same pilgrimage, recently recovered by the Museum, one of our oldest and most authenticated hieroglyphical paintings, has fixed with great exactness the facts which preceded the foundation of the City of Mexico, Tenochtitlan, even in its minutest detail.

The maps of Xolotzin, Tlotzin, and Quinatzin complete the history of the Texcocans, being of a most interesting character, inasmuch as they graphically describe the troglodyte life of the Chichimecs. In the Dehesa Codex we have presented to us the journey and conquests of the Zapotecans, while the Porfirio Diaz furnishes us with their campaigns against the Cuicatecans. And there are yet many other paintings which supply us with valuable information for our history.

The inscriptions or reliefs in stone, almost as yet undeveloped by man's study, have contributed in no small degree towards this end. It will suffice our purpose to mention the Stone of Famine and the Cuauhxicalli of Tizoc, both in the hall of monoliths of the National Museum of Mexico. The former has indisputably fixed the dates of that calamity, which was on the point of exterminating the ancient Aztec race. The latter has corrected erroneous traditions about King Tizoc, presenting us with the series of his victories and conquests.

In this way will archeological studies, especially when the explorations in our ruins and monuments can be conducted on a truly scientific basis, complete and correct our ancient history, of no less interest and instruction than those of the primitive peoples of the East, whose investigation is now so rightly the subject of scientific research.

But if archeology is a great aid in the study of history, anthropology, the science of man, is all the more so. Man has ever striven to learn all that surrounds him, fathoming the mysteries from pole to pole. With gaze steadily fixed on the firmament, he has endeavored to learn how the sun and the moon move; later to ascertain the courses of the planets; then the laws governing the motions of the heavenly bodies, from the Milky Way to the tiniest star. He has dared to force his way into the bowels of the earth, to rob from her her treasures; he has studied her marvelous formation; he has traversed her aged forests; has classified her fauna and her flora; he has plowed through her lakes, her rivers, and her seas, making himself the lord and master of the whole world: in a word, man has, in that small cavity of his brain, imprisoned the immense universe.

There yet remained for him to study the grandest and noblest; man furnishing a subject of study for man. He has ever regarded himself as the most worthy, most perfect, and most sublime creature of creation, or, in the words of the Bible: "God made man in his own image and likeness." To make man in the likeness of God is to deify him.

When the primitive peoples, after worshiping animals, passed from this zoölatry to the worship of trees, and later to that of the

mountains, reaching at length that of the celestial bodies, — for all the while their mental faculties were continually developing, — wished to give to their divinities some material form, to raise in their honor temples and pyramids, and finally to organize their religious rites, they clothed these superior deities, the product of a superior intelligence, with human shape. Man in his turn made the gods in his image and likeness.

Following this idea, it is illogical to confine the science of man to his study as an object of natural history or as an animal. Somatology and ethnology, and consequently ethnography, doubtless belong to it also. Man has not only a body, but natural faculties as well, which cannot be left out of reckoning in his study. He thinks, he has an ever active brain. The collection of his thoughts forms his philosophy, just as his method of thinking makes his logic. He has a heart, and feels, and of these feelings his morals and religion are born. One of his most beautiful faculties is the power to express what he thinks and what he feels. If he does this by means of speech, grammar, oratory, and rhetoric belong to the science of man. But he may also express it by means of writing, and then poetry, and literature in general, are also to be considered as forming part; or again, he may give his thoughts to the world through painting, sculpture, and the other esthetic arts. If we should not ascribe a conventional meaning to these names, but only what truly corresponds to them from their component parts, in anthropology should be included all the subjective sciences.

I may perhaps seem overbold in thus introducing an innovation in the already established methods; but if we should consider man in a special way, we must take into account all that is his, treating separately the objective, what is apart from him. So then, conceived in this light, archeology is not only a great aid to anthropology; but an absolute necessity towards its perfect knowledge and complete development, in every way one of the branches which I have mentioned.

Let us begin by studying the human races, one of the most important objects of ethnology.

Isolated and differing traditions, perhaps correct, but still imperfect, furnish us with but vague ideas as to man's origin and distribution over the face of the globe. On this point history is silent; that does not come within its sphere; it can only record facts united to a clear and exact chronology. The cosmogonic epochs, designated by the Nahuas as Suns, have only been known through the study of the hieroglyphics.

Four pages of a codex preserved in the Library of the Vatican teach us that the first epoch was known as *Atonatiuh*, or the Sun of Water; that towards its end, the world perished by a flood, the

catastrophe having occurred on the day *matlactli atl* of the score *atemoztli*. Perhaps this corresponds to the sinking of Atlantis. The second was the Sun of Air, or *Ehecatonatiuh*, in all probability relative to the glacial epoch, which lasted 810 years, ending on the day *ce ocelotl* of the score *pachtli*. The third was the Sun of Fire, or *Fletonatiuh*, corresponding to the epoch of the great volcanic eruptions; it was 964 years in length, having ended on the day *chicunahui olin* of the score *xilomaniliztli*. And lastly, the Sun of Land, or *Tlaltonatiuh*, which extended over a period of 1046 years. In this way archeology has revealed to us that the Nahua existence race was in 3877 years before the Christian Era, which would make it to-day 5781 years.

It is evident to all that the question of the migrations of the first peoples is one of the gravest, and which has always occupied the attention of scholars. So far as it is concerned, there exist ancient traditions, of general acceptance in the Old World, but which do not satisfactorily explain man's march across time and space.

On the continent of America, and especially in the territory embracing the republics of Mexico and the United States of to-day, there recur with great frequency traditions with regard to the coming of certain races which traveled south from the latter to the former. Historians of the seventeenth and eighteenth centuries present us with the course which the journey of the Toltecs took; while those of the sixteenth had already mentioned the pilgrimage of the Aztecs. But these are relatively modern facts which are within our era: even so, however, the journey of the Mexicas has only within very recent times been definitely fixed, owing to the exact deciphering of the painting known as the Historical Hieroglyphical Chart of the Aztec Pilgrimage.

But still more is due to archeology. I have already, in my *Ancient History of Mexico*, twenty years ago, called attention to the following facts. Everything tends to prove the very ancient union of the continents, and the existence of Atlantis. In those remote ages negroes were to be found in our territory, as is proved by the colossal head of Hueyapan and the gigantic axe from the coasts of Vera Cruz. From the most ancient times a race appears on our continent, perhaps autochthonous, monosyllabic and represented in Mexico by the Otomies, remnants of which are to be found to the present day. The first foreign invasion, at any rate so far as the north is concerned, coming probably over Atlantis, took place centuries ago, and was of a race of agglutinative speech, which was afterwards called Nahua. The three following facts, all well substantiated, are worthy of note: that there exists a Tula in the south of Russia; that in the Caucasus there are vestiges of an arithmetic counted by scores; and that there are to be found in that region a people whose

language has the consonant *tl*: all of these peculiarities being proper to the above-mentioned Nahua race. As this race extended, it must necessarily have driven the autochthonous race towards the north and west. The analogies existing between the customs, anthropological characters, and traditions of the peoples of northern Asia and America, are well known. If the Esquimaux could cross from one continent to another, it is but logical to believe that the monosyllabic peoples, driven out by the Nahuas, in very remote times crossed from the northwest of America to the northeast of Asia, and advanced into the latter, extending from east to west, as is borne out by their historical records. Later, in the age of the worked stone, and perhaps when copper was being used, the Chanes came to the region of the Uzumacinta, in boats, according to tradition. On mixing with the monosyllabic race, Mam or Mox, they not only formed in that territory a new ethnographical body with a language of its own, but by its development and the natural law of expansion, they extended as far as the two isthmuses, and, passing what is now known as Tehuantepec, continued in a northerly direction.

The idols with *nasem* found in Michoacan prove that they reached as far as there and were stopped in their advance by the Mecas, inhabitants of Xalixco. In the east they continued along the present territory of Vera Cruz, passing beyond La Quemada in Zacatecas. In structure, these ruins are closely connected with those of Aké in the Maya Peninsula. It is, therefore, an absurdity to call them Chicomoztoc, as this would be to attribute them to races which neither passed thither, nor even ever had an idea of their existence. The theory that the races from the south followed the coast-line and went up the Mississippi is not without a certain amount of foundation. This fact appears to be proved by the kind of constructions of the mound-builders, the character of the carved shells found in them, certain traces in the linguistics, and many other such circumstances. Then, the invasion towards the north from the east drove the ancient tribes towards the west, while these in their turn emigrated to the south, one of the first of such migrations being that of the Xiuhs, who set out on their journey in the year 626 before the common era. Having reached the southern portion of our territory, they produced, by their union with the peoples already existing there, that marvelous civilization, as revealed in the ruins of Yucatan and Palenke.

As I have already stated, the linguistics confirms all this. The craniological explorations conducted by Professor Hrdlička have come to prove the traditions, so far as refers to the Nahuas.

Archeology has thus made great advances in so important a subject as that of the migrations; nay, more, it will, so far as is possible,

explain how man was born into the world and how he extended himself all over it.

Science also can say: "Fiat Lux."

But if man's material life, to call it so, is plainly reflected in the study of the migrations, his intellectual life is chiefly made known to us by the evolution of his religious ideas: and on this point as well, the aid of archeology is of equal importance. Much light has been thrown on the subject by the explorations of latter years on the old Continent. The studies of our antiquities have settled beyond a doubt the Indian theogony. The Maya chroniclers of the seventeenth century had given us but scant information, indefinite and unclassified at its best. By the labors of Schellhas, Brinton, and Gunckel, great strides have been advanced in a relatively short space of time. Taking these as our point of departure, penetrating into the spirit of the hieroglyphics and inscriptions, and comparing them with the corresponding Nahua ideas, which are half hidden in bizarre tales and strange codex paintings, we have been able to lift a corner of the veil of that astronomical theogony, as mysterious as the night on which the awestruck eyes of men created it. In the black vault of heaven the bright stars, like luminous pupils of invisible gods: on earth, above the *teocalli*, the piercing eyes of the astronomer priests, like dazzling stars such as might have fallen from the skies. From this clash of lights, men's eyes and stars, there was kindled that first spark of uranic religion.

Man, in proportion to the development of his brain, continuously raised his gaze: at first it was directed earthward to the animals that walk on the ground; next to the trees that lifted their graceful tops to the wind; then up to high peaks crowned with eternal snow; till finally it rested on the sky.

There was then formed a majestic — one might almost say heavenly — astronomical religion. The father creator was the sky, *Xiuh-tecuhtli*, the azure lord; the mother was *Omecihuatl*, the double woman, the Milky Way. The former worked on the latter by means of fire; and from their cosmic matter the stars were loosened; the chief of which were the sun, *Tonatiuh*, the moon, *Tezcatlipoca*, and Venus, *Quetzalcoatl*. These they made their greatest gods. In order to worship them, they "represented them as anthropomorphic:" they represented them in human shape. Myriads of statues of deities were then made, now of clay, now of wood, now of stone; and so idolatry necessarily came into existence. The Indians were able to arrive at an astronomical worship; but their psychological limitations hindered them from penetrating beyond the veil of materialism. They had worshiped animals because they could see and hold them; the trees they could touch; the mountains where their feet ascended; the stars their eyes beheld. Yet did they not advance

as far as abstract ideas; they had no spiritual conceptions. To designate the spirit, they used in Nahua the word *checatl*, while in Maya the word *ik*: both terms denote the air. The air is undoubtedly the least tangible of material bodies; but the Indians could feel it as it gently fanned their faces. If I may be permitted the expression, I shall say that their spirits were corporeal.

All was born of the Milky Way, and all returned to it. From this materialistic pantheism and from this idolatry of stone gods, there had to come at length an absurd fanaticism, a black fatalism, and a dreadful worship of blood.

But the adoration of the three stars brought along with it a marvelous chronology. The Nahua priests, and following their example the Maya, combined in a truly amazing manner the calculations of Venus, the Sun and the Moon, forming a perfect cycle system. It is a matter to cause us wonder and surprise, how, destitute of adequate instruments, and only through the constant observations which they conducted by night from their elevated *teocallis*, were they enabled to state precisely the synodical revolutions of Venus, which they fixed at 584 days; and adding together five of these revolutions, they found that they were equal in length to eight solar years: hence they had a basis of calculation for the formation of the different cycles. But there yet remains more to tell: as they observed that the calculation of the synodical revolution of Venus was not exact,—being in reality 583.92,—they made the corresponding correction, for which they changed the octennial feast called *Atamalqualiztli*, which is proved by the paintings of the Borgian Codex.

Centuries prior to this, they had introduced the leap-year: they had noticed that there was an error in calculation, and so they added either sixty-five days in every great cycle of 1040 years, or thirteen in every *Xiuhmolpilli* of fifty-two, or again one in every four, according to the various methods of intercalation: and in the year 1454 of the common era, in the reign of Motecuhzoma Ilhuicamina, the Mexicans corrected this error, as is proved by the above-mentioned Borgian Codex, as well as by the stone cylinder existing in the Hall of Monoliths of the National Museum of Mexico.

I am not in a position to affirm whether, after the conquest of Mexico, the system of the Indians, having become known in Europe, influenced the astronomer Luis Lilio and contributed towards the making of the Gregorian correction in 1582, one hundred and twenty-eight years after the Mexicans had already adopted it. The fact remains, however, that the European calculation, actually in vogue at the present day, is not so perfect as was that of the Indians. According to this latter a leap-year was omitted every 130 years, as we see by the Bologna Codex, or eight days at the end of every

great cycle of 1040 years, according to the Borgian Codex. By this simple method stated by Fábrega and Baron Humboldt, and calculated by Orozco y Berra, a period of 23,000 years would have to elapse before there were an error of a single day. Our archeological calendar may yet bestow great services on modern chronology.

What causes us most wonder is how the priests could, in a book of seventy-six pages, store up all the treasures of their astronomical science, expressing their ideas by means of strange figures; as they have done in the case of the Borgian Codex, few fragments of which have we been able to decipher: but should the day ever come when all is deciphered, what portentous secrets will it then disclose to us!

Man does not live alone on the earth; by a law of nature he is ever in the company of his fellow men: and that science, therefore, which treats of the constitution, phenomena, and growth of the human society is indeed an important one. On this subject archeology has extended effective help to the researches of scholars. It is not my purpose to present to the Congress what might be termed archeological sociology; nor shall I speak of the organization of the ancient Indian peoples, nor of their civil and penal laws, nor of their conception of international law, nor of their *pochtecas*, both merchants and ambassadors at once, the institution of which created a special mercantile right; nor shall I treat of the ideas of the Mexicans with regard to the family, property in general, and their laws of succession; nor of the division of work, nor yet of the professions; I shall not speak at length on their views with reference to authority, nor how this was exercised in the various public services, nor how the taxes were levied and collected, and how they have set this forth in hieroglyphical codices: the limits to my address would not permit of so much. I shall therefore direct my attention solely to demonstrating the relation existing between the two sciences, archeology and sociology, as viewed in two different cases.

The philosopher Herbert Spencer stated that the Mexicans always shared their rural property in common, and consequently had never conceived the possession of private land properties. A codex which I have already published, the parallel of which exists in the National Library of Paris, graphically shows us the different lands of varying extent, granted to the conquerors of Azcapotzalco by the kings of Mexico, Itzcoatl, and Moteczuma. Each plot of land has both its name and that of the owner inscribed on it in hieroglyphical characters. Thus has archeology been able to correct an error of the great Spencer.

The other fact is more transcendental. A school has been formed, which condemns the conquest of America by the Europeans as an

unnecessary factor in the progress of humanity. The essential ideas of the said school can be summed up in the following words of my old friend Dr. Brinton, whose death all we Americanists deplore. On a similar occasion to this, he said: "The native American was a *man*, a man as we are men, with the same faculties and aspirations, with like aims and ambitions, working, as our ancestors worked, endeavoring to carry out similar plans with very similar means, fighting the same foes, seeking the same allies, and consequently arriving at the same, or similar results!"

Let us see what the ruins have to tell us on so important a point. Let us read those pages of stone. We shall select the best, those of Palenke with the valley of Usumacinta, and the famous ruins of Yucatan. They belong to one race, the Maya: and are to be found in two neighboring states of our republic, whose area covers an extent less than one hundredth of that portion occupied by the very same Mayas, Nahuas, and autochthonous Otomies. We are engaged there with a relatively small portion of land. Now then, even with reference to one race and to a territory not extensive, the ruins, if they bear traits of similarity, reveal various autonomies and different governments. Palenke, together with the other towns in the valley of Usumacinta, are characterized by the towers of their palaces and the superstructures of their temples, which are lacking in the Yucatan monuments. With reference to these latter, those of Chichen Itza, Uxmal, and Mayapan present distinct characters: while the governments of Cheles, Cocomes, and Xiuhs were separated. What is revealed to us in this inequality? That, even in their most advanced state of civilization, the Indians did not possess sociological faculties necessary for the formation of great nationalities.

The Mexicans themselves, who led their conquering armies as far as the frontiers of Guatemala, did not enlarge their territory by means of their conquests: they were content to levy taxes on the conquered peoples. In the very valley of Mexico itself, around the salt lake, the lands to the west and south were in part added; while those of the east and north belonged to the Acolhuas of Texcoco and other small seignories; but around the fresh-water lake the Chalcas, Colhuas, Xochimilcas, and some peoples of lesser importance governed.

What should be the result of this sociological state? That the country, once divided into a large number of kingdoms and seignories, was in a constant state of warfare, one against the other, so that powerful nationalities, which might assure the peace and prosperity of the Indians, could not be formed. On the contrary, everywhere there were evidences of decadence; and in due course of time, by the inevitable laws of history, came the conquest. Which

proves once more that the progress of humanity does not always march in accordance with justice.

With regard to the sciences of practical utility, as they are chiefly based on recently acquired knowledge, as for example those relative to steam and electricity, it would not be an easy task to discover in what their relation to archeology consisted. I shall, however, mention medicine. Modern science cannot afford to look with disdain on the medical knowledge of the ancient Indians, seeing that to them it owes quinine and coca, two remedies employed universally with great success.

The Mexicans had a real curative science, which constituted one of the professions of their society. Let it serve my purpose to state here that in the fifteenth century they already employed anesthetics, and had a military medical corps which accompanied their armies into action.

A study, therefore, of those ancient medicines, still used to the present day by the Indians in the fields, will undoubtedly be beneficial: and with this end in view, the Mexican Government has already founded a Medical Institute, the good results accruing from which will soon be seen by us all, as soon as the processes of experimentation shall be sufficiently advanced.

The Indian medicine was based on botany. Messrs. Gerste and Troncoso have written valuable treatises on this important subject, and their very classification itself is based on the diverse curative power of the plants.

Let us pass on to the arts. No one can deny that archeology has been a powerful factor in their development and perfectioning. A mere glance at the epoch of the Renaissance will suffice to establish the fact. Architecture was inspired by the ruins of the Greek and Roman monuments. The basilica of St. Peter's is not the evolution of the ideas of the Middle Ages; it is a return to the ancient Roman architecture, it is a Cæsarian building crowned with the dome of Michael Angelo, as with the Emperor's crown. The Moses of San Pietro in Vinculo is not an expression of sentiment of the Christian idea: from its majesty and the grandeur of its expression and lines, it rather resembles an Olympic Jupiter, the Zeus of Homer. Raphael abandoned the mystical Madonnas of Botticelli and Perugino, and, deriving his inspiration from the pagan statues, painted his peerless virgins, whose most perfect type was that "of the Chair." All the arts from the Old World formed a New; and the Renaissance was its golden age, not hitherto attained to, not excelled in after time, perhaps never even equaled. Archeology contributed to convert the Rome of Leo X into the capital of the world of arts, as it was of Christianity. That same Rome was already bedecking herself with Egyptian obelisks. Not only the

Roman which inspired that of the Loggias, but also the polychromy of Pompeii, served to give new ideals to art that were in reality only archeological reflections. And there have been examples in all ages, from the German Gothic, from the Spanish plateresque, from the Arabian filigree-work, from the Cyclopean constructions. Even to-day *L'Art Nouveau* has been formed from the archeological débris of the ancient arts.

On this subject much aid can be given by our ruins. The constructions of triangular arches with odd superstructures from the region of Pálemke; its palaces with towers; its reliefs, which, like that of La Cruz, reveal a study of composition; its stuccos, whose figures are noteworthy for their design and the knowledge of the human frame; the esthetical atmosphere of special character which is dominant throughout; the rich reliefs and gorgeous style of the gigantic monoliths of Copán: the Maya colonnades, which, like those of Zayi, are as pure as the Greek, and the columns carved with leaves of Tollan; the ramparts with fanciful faces of Kabáh and the sculptured walls of Chichén Itzá; the façades with grotesque masks from the nuns' house in Uxmal; their corners with monsters with uplifted trunks;—all these furnish rich and abundant elements for the arts; no less than the Grecian frets of Mitla, and a few sculptures which have escaped from the destruction of the great Teocalli, such as the tiger unearthed in the Department of Justice, the colossal Coatlicue adorned with serpents beautifully carved, the spherical diorite head of Tlahuizcalpantecuhtli, and the cyclographical stone, popularly called the Aztec Calendar, in which one is at a loss whether to admire most the astronomical and chronological knowledge therein enshrined, the geometrical science necessary in the making of it, or its marvelous execution.

Some day there will be a Mexican art.

Archeology, in its relation to the other sciences, deserves admittance into this Congress, where all the living forces of humanity are represented, whether in intellectual conception or in practical process.

But archeology is the symbol of death. Is it, perchance, rightly admitted here, because life and death are ever linked together, and together they comprise man's history, as the day has the brightness of its sun and the dark shadows of its night? There is yet a still more potent reason. All the sciences and all the arts are the result of the accumulation of centuries of human thought. Nothing is improvised on the earth. The first generations bequeathed their meager knowledge to the next generations, who added to it. These, in their turn, left it as a heritage to those who came after: and so man formed that wealth of scientific knowledge which he,

to-day, possesses, like the poor but industrious man who, thriftily, cent by cent, at length succeeds in piling up heaps of golden coins.

No one knows whether, on removing the stones of some ruin, it will be found that one of the great ideas, which is to-day the inheritance of modern nations, did not have there its birth. When, in centuries to come, the city of Seville perchance may disappear, some scholar, perhaps, on finding the remains of the Giralda, may be unaware that from the brain which framed it there was evolved algebra.

For these reasons, the science of dead things has its place in the exposition with which the city of St. Louis astounds the world. Here are gathered all the forces of the civilized nations, that, vying one with another, exhibit their products in science, art, industry, and commerce. Here is to be found whatever the present generation has been able to attain. And all here strikes wonder into the soul and admiration into the mind. It might be thought that the earth was giving a concert to the skies, with the screeching of locomotives, the whistling of engines, the scraping of plows, the creaking of presses, the measured thud of steamers, the movement of all the nations here united, with their many-tongued clamor, with the monster's breath exhaled by multitudes: a glorious hymn of work, accompanied by the waters of the Mississippi.

And all here is flames and conflagration: and all is fire and light. And to this eruption of the splendors of the sciences and arts, there is added archeology, the phosphorescent fire of the immense cemetery of past ages. Phosphorescent fire: yes, but fire. And all fire is light!

THE PROBLEMS OF ARCHEOLOGY

BY GEORGE EDUARD SELER

(Translated from the German by Dr. George Kriehn, New York)

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In this distinguished assembly, gathered in the place where all the material labors of the world have contributed their results to form a picture whose brilliancy can hardly be surpassed, and to which chosen representatives of all the sciences have been bidden in order to present in one harmonious whole the varied intellectual achievements of all nations, I am asked to speak of what has been accomplished of late years in my own department, that of archeology, and to lay before you the significance for the other sciences of these results.

There is scarcely any science to which coöperation with the others is so necessary as it is to archeology; yet there is scarcely one which in so short a space of time has gained so much in substantive importance, has entered so much into the work of the others, and has so demonstrated its usefulness to their progress. This is equally true of prehistoric European and classical archeology, and of the study of the antiquities of America. To look first at merely external facts, who would have thought it possible a hundred years ago that to-day in all parts of Europe hundreds of museums would exist, filled with the domestic utensils, weapons, vessels, and ornaments of peoples from whom no historical knowledge of any kind has come down to us — some of whom, indeed, go back to a period whose antiquity can only be computed by the calculations of geologists, when the vine-clad hills bordering the Rhine and the Lake of Constance were barren as the steppes and tundras of Siberia, when the reindeer, the wild ass, and the mammoth served as objects of the chase and at the same time gave men the first impulse towards the satisfaction of their artistic feelings? You will be told by those whose province it is how classical studies have been enlarged and reshaped by the results of the science of the spade — how the excavation of the ancient seats of civilization in Babylonia and Egypt permit whole vanished worlds to rise anew before our

eyes. My task is to give you, in a brief and summary way, an idea of what we have gained from the most recent investigations in the continent upon which we are now assembled, — that old continent which we, the children of another, have been accustomed to call the New World.

To begin with the North: it is too early to speak of archeology here as a separate science. The discoveries which have been made are the work of expeditions sent out for the solution of geographical problems or for the accumulation of collections to serve for the study of natural history or ethnography. Yet some facts of great historical significance may be deduced from the objects, not at first sight remarkable, which form the contents of the ancient graves of that region. We are entitled to infer, in the first place, that the existence founded upon the life of the Arctic fauna and adapted to it, — that of the Eskimo as they were first seen by Europeans, with all their peculiar civilization, their extremely clever adaptation of the wretched materials at their command to the making of weapons, utensils, houses, boats, — must have gone on in practically the same form for a thousand years at least, and probably much longer. Another fact of importance may be mentioned as the immediate result of combined archeological and topographical expeditions, especially those from Denmark and from Sweden and Norway. It is that the migration of the Eskimo to Greenland must have gone by way of Ellesmere Land and the northern coast of Greenland, down the east coast, and thus to the west coast. If, now, we take with this the statements of the Icelandic sagas that the first settlers in Greenland found remains of the houses of the *Skrallings*, — the small race which about the year 1000 inhabited the coasts of Labrador, Newfoundland, and Maine, — and that it was some of these same *Skrallings* who finally overthrew the important settlements of the Icelanders in Greenland, two further noteworthy facts emerge: that the Eskimo must, at a distant period, have spread southward at least as far as the coast of Maine, and that in various waves of migration, separated by intervals of time, they must have pressed on by the far northern way already mentioned, as far as the western coast of Greenland.

To-day the northwest, with its deep-cut fjords, its streams abounding in fish, and its wooded shores, is inhabited by a number of tribes who differ considerably in language, but show a remarkable similarity not only in their material civilization, but in their legends, their social organization, their religious conceptions, and the artistic productions based upon them. As to that which is the most distinctive thing in this ethnographic group, the social structure and what depends upon it, Professor Boas has recently shown that it really represents quite a late type of development. The archeological

explorations made by the Jesup expedition not long ago in this and the neighboring regions seem to yield the interesting fact that all these tribes were forced outward from the interior to the coast at a period perhaps not very remote.

In the central and southern portions of the United States, great triumphs have been won by archeology. Since Squier and Davis published their celebrated book, their work has been energetically taken up by the Peabody Museum, the Smithsonian Institute, and a number of other learned societies, and carried forward with great success. The valleys of the Ohio and the Delaware, Wisconsin, and the Lake region, the Mississippi Valley, the neighborhood of this very place, which proudly calls itself the "Mound City," the Alleghanies, Georgia, Florida, have yielded an immense number of objects of the most interesting nature. For their preservation and scientific study, museums have grown up in many American cities, whose well-adapted and liberal equipment has roused the admiration of scholars. Through these discoveries, the meager accounts given by early writers of the Indian tribes who inhabited these fertile plains at the time of the first white settlement—accounts which, to say nothing of their marked tendency to exaggeration, plainly correspond with but little faithfulness to that which lay before the eyes of the writers—have received for the first time their proper elucidation. For it seems to be firmly established by the exhaustive investigations of the last few decades that it was the ancestors of the Indians of to-day who were buried in the mounds, sarcophagi, and graves; that it is their domestic utensils, their ornaments, their ceremonial and social symbols, their instruments of worship, which we contemplate with astonishment to-day in the various American museums as objects discovered in the mounds. That the condition of material, and perhaps the intellectual advancement, was distinctly higher than that of the Indians with whom the immediate ancestors of the present generation had to contend, may be seen at once from these discoveries. But the nature of the discoveries shows us also that among them every man's hand was not always, as people have been accustomed to suppose, against every man,—that rather, in spite of all their wars, there was a wide range of predominantly peaceful intercourse. We frequently find in one and the same spot copper from the Great Lakes, mica from the Alleghanies, mussel-shells from the Gulf, pieces of obsidian from the Central Basin, and snail-shells from the Pacific. If, however, the old theory of a special race of mound-builders has long ago had to be abandoned, a significant displacement of the tribes undoubtedly occurred, none the less; and it is not impossible that whole tribes have disappeared from the face of the earth, and speak to us only in the fragments that we dig up. Philology (in the

critical analysis of local names), archeology, and history will have to work together in order to furnish even an approximately correct idea of the former distribution of the tribes and of their mutual relations.

It is primarily from archeology that we may expect an answer to the question where was the old racial connection between North America (perhaps with Florida for a bridge), the West Indies, and South America. The fruitful investigations of Clarence B. Moore and the lamented Cushing afford matter for much thought. Unfortunately, the exact archeological investigation of the West Indian region has only just begun. And, although remarkable discoveries have been made on the island of Marajó and the banks of the Amazon opposite to it, yet the investigation as to South America also is still too incomplete for us to do more (with that of the intervening territory hardly even planned out) than make a conjectural statement as to any extensive connection. There are certain single details—such as the Haitian game of *batey*, resembling the game of ball called *tlachtli* by the Mexicans, the use of some of the Mexican *teponaztli*, similar wooden drums, and the like—which seem to point to a connection between the West Indies and Central America. Indeed, Columbus, on his first voyage, during the passage from Cuba to Haiti, had definite news of a land in the west, very rich in gold, whose inhabitants wore clothes. It seems to me, too, that it is possible to demonstrate a family connection between the Arawaki speech of Guiana and the Maya tongues.

But American archeology is most at home in the lofty plateaus of the Andes and the strips of coast immediately below them, and especially in Mexico and Central America. In these regions, inhabited by people of advanced culture, brilliant performances were achieved in the first generation after the conquest, which have only within the last half century been properly appreciated and studied in detail. In the seventeenth and eighteenth centuries, it was the scene of the labors of some accomplished scholars, such as Siguenza y Góngora. Padre Antonio Alzate published a description of the pyramid of Xothicalco; and Leon y Gama, in his famous work *Dos Piedras*, described the great stone monuments found in the principal square of Mexico in connection with the paving and canal system. The imposing personality of Alexander von Humboldt attracted the interest of the whole civilized world to these antiquities; and men like Captain Dupaix, Alaman, Carlos Maria Bustamante, Fernando Ramirez, Manuel Orozco y Barra, and my esteemed colleague Alfredo Chavero have laid the foundations on which we are now trying to build. Here, more than elsewhere, it is evident how much history needs the aid of archeology, especially

to fill the large gaps which tradition, defective and dependent on chance as it is, has left.

About the middle of the sixteenth century appeared the great work of Fray Bernardino de Sahagun, an encyclopedia of the traditional knowledge possessed by the old inhabitants of the capital of Mexico, written down from the lips of the natives and in their own language. To about the same time belong the notes of Fray Toribio de Benavente, who called himself by a Mexican name, Motolinia, "the poor man." These, while not nearly so extensive or so thorough as Sahagun's, and written in Spanish by a Spanish monk, have an importance of their own; living far from the capital, Padre Motolinia knew and described conditions prevailing in a much wider region. The original work of Sahagun disappeared in the archives of the Consejo de Indias, but copies of the Spanish translation existed in the libraries of the Franciscan houses. These, as well as the book of Motolinia and other sources, were recast by Torquemada and others according to the taste and the interests of their own times, until Clavigero brought together all the antiquities of Mexico in a cleverly written book which formed the main authority of Humboldt and his successors. That we have now got far beyond the diluted, frequently inexact or actually distorted idea given by this author is due not only to our having gone back to the real old sources, which have come to light since his time, but also to the elucidations which archeology furnishes. The meritorious publications of Lord Kingsborough made possible the real study of the Mexican hieroglyphs, as it was first attempted by Dr. Antonio Peñafiel. The descriptions and drawings of the Sahagun manuscript taught us to know the figures of the gods; and by their aid we are able also to identify the stone images and the small clay figures which the old Mexican collections contain in such numbers. Finally, both through them and through the interpretations appended to the Codex Telleriano-Remensis and the Vatican Codex 3738, we are able to decipher the pictorial representations of the manuscripts of the Codex Borgia group and the Mexican picture-writing in the narrower sense, and so to secure a safe basis for studying the religious and festival tradition of the Mexicans.

Just as here archeology and history supplement each other, so recent observations have shown that the descriptive ethnology which appeals to surviving representatives of old tribes has need to keep archeological facts before its eyes during the progress of its researches. A few years ago expeditions were sent out by one of the great American museums into the Sierra Madre of north-western Mexico, under the leadership of the explorer Karl Lumholtz. The undertaking was successful in more than one respect.

Among its most interesting results was the fact that in the Huichol tribe Lumholtz found and was able to study a people that was still living in, or had relapsed into, almost primitive conditions. I read at the time with great interest, as did every one else, the account which Lumholtz gave of this tribe; but it was plain to me at the first glance that a large number of customs, signs, and symbols really could not be understood without comparison with the exact descriptions of the old Mexican sources and a knowledge of old Mexican symbolism.

The same is true of the peculiar province of the Pueblo civilization. In regard to this the investigations have not yet gone very far. The first attempt was made by my friend, Dr. Walter Fewkes, who tried to explain the famous snake-dance of the Hopi Indians by the cognate ceremony of the old Mexican *atamalqualiztli*. On the other hand, it is equally true that the meaning of the old Mexican festal ceremonies, figures, and symbols can only be reached when we have succeeded in determining that of the various festivals of the Pueblo Indians, of the ornamentation which is still used by them, and of the decorations which we are able to study on their utensils and fragments as found by excavators. I have purposely made this distinction between what they use to-day and what we see on the old pieces; for the whole curious world of the Pueblo Indians of New Mexico and Arizona, which has aroused the special interest of investigators and travelers, is itself only intelligible when we study it in the light of archeological discoveries. The cliff dwellings are not only the precursors of the *pueblos* of to-day, with their houses built up one above another, like fortresses, in curved lines, but they explain them. The peculiar subterranean chamber for worship, the *kibva*, is understood when we see the narrow space there is in the overhanging rock-shelters. We cannot, of course, dig up the festivals and dances whose survival, like a curious fossil, gives us so instructive a picture of the primitive conception of the world and primitive religious practices adapted to the special daily needs of the community; but the types which appear in them are to be found in many of the ancient rock-sculptures of the district or on the singular painted plates which have been found in some of the deserted *pueblos*. Their system of ornamentation, again, will only be fully understood when we can subject to a thorough comparative examination the old models, as they may be so admirably seen, *e. g.*, in the vessels and platters dug up in Awátobi.

An example of the way in which only the data furnished by archeology supply us with the solution of a problem is given by the development of our knowledge concerning the hieroglyphic writing of the Maya tribes of Central America. Through Bishop

Landa, the oldest chronicler of Yucatan, we had learned to know the hieroglyphics of the twenty signs for days and the eighteen for the so-called months, or periods of twenty days (*uinal*). The further example, given by Landa, of a real hieroglyphic character by which Brasseur de Bourbourg and others believed they could read the hieroglyphic texts, has proved to be a mystification, or an attempt made in later and Christian times, from which nothing was to be gained for the understanding of the old texts. More recently, Schultz-Sellack and De Rosny identified the hieroglyphs of the signs of the zodiac. Förstemann, with the insight of genius, got hold of the numeral system and the characters used for it in the Maya manuscripts, and gave us the hieroglyph of Venus; and Schellhas established a number of the hieroglyphs of the gods. I have myself shown the essential identity of the day-signs used by the Maya and in Mexico, the hieroglyphic designations of the colors and other elements, as well as a number of further hieroglyphs of the gods and the symbols which accompany them. But that we are able to-day to recognize at the head of the hieroglyphic columns the numeral products which give the distance of the following date from the original initial date demonstrated by Förstemann, four *ahau*, eight *cumku*, and that in consequence we are able to fix the chronological order of the whole series of monuments: this has been rendered possible by the labors of Alfred P. Maudslay, through the synopsis of the "initial series" which he has given on a page of his splendid book on the monuments of Copan in Honduras.

But archeology is especially needed to fill out the gaps left by historical tradition. The early historians, especially the conquering Spaniards, occupied themselves principally with the tribe which at the time of the conquest held the headship. Of the other tribes, their past, their frequently quite distinct material and social civilization, only comparatively scanty accounts have been preserved. The filling-out of these gaps is only to be hoped from archeology, which has already made very promising beginnings. In the central portion of the state of Vera Cruz the excavations of Dr. Hermann Strebel have permitted us to recognize two entirely distinct civilizations, one of which, the Cerro Montoso type, is indisputably allied to the artistic style of the highland Mexicans of the Cholula district, while the other, the Ranchito de las Animas type, shows, both in material and technique and in ornamentation, a totally distinct form, betraying a specially aboriginal element. Archeology thus confirms the assertions of history in regard to the extension of the highland race of Chichimos, a race of Mexican speech, into the coast-strip inhabited by the Totonacs. In like manner, further north, my wife and I found a settlement

at Castillo de Teayo, in a district all around which the Huastecs had taken possession, where we met with Mixcouatl, the hunting-god, Chicomecouatl, the goddess of corn, Tlaloc, the rain-god, Couatlicue, the water-goddess, Xipe Totec, the earth-god or spirit of the fields, and Macuil xochitl, the god of chance, — all well-known types of the Mexican highlands; and reliefs were cut on stone plates which seemed almost copies of the Magliabecchiano Codex, the old Mexican picture manuscript of the Biblioteca Nazionale at Florence. The accounts given in Tezozomoc's *Crónica Mexicana*, of warlike expeditions of the Mexican kings by way of Huauhchinango into the lands of the Huastecs from Tziuhcouac and Tochpan, were now intelligibly verified. To the south of Vera Cruz Hermann Strebel has demonstrated another distinct element of population in the Mistequilla, the district of Taliscocyan, which presumably corresponds to the Olmeca Uixtotin of Mexican tradition, — clay figures with broad, smiling faces and artistically shaved patterns on their heads, of which the Musée du Trocadéro has the richest collection among European museums. Next come the districts, not as yet thoroughly investigated from the archeological standpoint, of San Andres Tuxtla and Coatzacoalco; and at Tabasco the Maya region begins, with its wealth of monuments, stone buildings, façades covered with reliefs, and the long series of calculiform hieroglyphics which lend themselves to such effective decorative arrangements. And then suddenly appears, in the midst of this definitely Maya civilization, in the famous ruins of Chich'en Itzá in eastern Yucatan, a style of figures and a hieroglyphic which correspond to those of the Codex Borgia group and the group typified by the Vienna manuscript; with snake columns and caryatides reminding one of those of Tula, the famous old centre of civilization, already ruined at the time of the conquest, and connecting with the legends of the Toltecs, the oldest civilized race found on Mexican soil. Désiré Charnay observes that here we have in concrete form the accounts of the wanderings of the Toltecs towards the coast-lands, the stories of the *tlamatinime tonatiuh iixco yàquê*, the wise men whom their god directed to go to meet the sun, *i. e.*, towards the east.

The districts already described, lying around the Gulf of Mexico, form but a small part of the region inhabited by civilized races. Further investigations are still lacking to carry us along the road which leads from the old trade centre of Xicalanco to the Laguna de Términos over the Petén into Central America. And we are still imperfectly informed as to the routes by which the merchant caravans from Cholula and Mexico made their way to Anauac Xicalanco, the lands along the gold-coast, and on the other side to Anauac Ayotlan, the coast-strip on the Pacific, and to Guate-

mala. But when this whole territory has been more thoroughly explored, with the care to which European investigators are accustomed, we shall get a far more complete idea of the mutual relations of the tribes; and then for the first time it will be possible to write the ancient history of Mexico.

The region comprising Mexico and Central America is that in which American archeology is best able to rise above the standpoint of merely antiquarian investigation, and to attempt higher tasks. The question is yet unsolved whether the first appearance of what we call decoration is to be taken as a significant marking, as an inscription, so to speak, which is intended to place the object in relation with another being or object, real or imaginary; or whether a purely artistic impulse guided the hand of the first man who painted or carved an ornament of any kind, or worked itself out in the technique of weaving and plaiting. But we may take it as certain that we shall have to go back to a very early period, a stage of development not far removed from the general beginning. in order to trace the transition from merely useful tools to ornamented ones, the development from a simple marking, significant according to its meaning, to real ornament which owes its origin to a delight in form and color. There is a particular charm in trying to discover these first beginnings of primitive art. But in the Mexican-Central-American region this initial stage has long been passed. We meet here with productions, which, even if they are not to be placed beside the classical work of Greek artists, are yet, in conception, in the tasteful distribution of ornament, and in form, entitled to the designation of works of art. I need only remind you, for example, of the graceful arabesques of the borders on the sculptured walls of the temple of Chich'en Itzá, and of the hieroglyphic pictures, put together in a small space with such perfect art, of the *stelae*, altar-tablets, and other reliefs of Copan, Quiriguá, Palenque, and the ruined sites of Usumacinta, which the works of Maudslay and Teobert Maler have taught us to know. That the purely esthetic way of looking at things is beginning to gain ground in American archeology also is evidenced, for example, by the latest work of Hermann Strebel; and it is undoubtedly to be expected that before long this branch of science will have more work put on it, and that by its means some valuable results for the historical classification of the monuments will be attained.

The special traits of the old Mexican and Central American civilization, and the spread of Mexican elements of population, may be traced as far as the beautiful Lake Nicaragua. If we follow the indications of the flora and fauna, South America begins with the mountain ranges of Costa Rica; and thus far also extend the ethnological relations which go north from Colombia

over the Isthmus of Panama. This is proved by the languages and the civilization of the remains of the native population; and the same lesson, as far as our investigations have carried us, is taught by the archeological material. A limited region, including the old settlements on the slopes of the volcano of Irazú and certain groups of hills which extend down into the Atlantic lowlands, has lately been investigated in a really exemplary manner by E. V. Hartman, whose results have been published in a sumptuous work distinguished by the Swedish Academy with the Duke of Loubat's prize. Outside of this, to be sure, we still lack excavations undertaken in a scientific manner and authenticated by documents. But the whole mass of material — the eagles worn on the breast which struck Columbus and his companions, the gold ornaments found, the form of the vessels, the frequently repeated lizard and toad *motif* — prove that a similar civilization prevailed on both sides of the Isthmus of Panama, however widely the tribes were separated in language, and from whatever different points they migrated to the valleys, hills, and forests of this region. A special place belongs to the plateau of Bogotá, which marks the centre of a distinct region of civilization, the land of El Dorado, the cacique of Guatavita, who, covered with gold-dust, went out on a raft to the middle of the lagoon, and there, plunging beneath the waters, offered his costly decorations in sacrifice to the gods. It is an interesting archeological fact that an image of this cacique and his attendants, executed in gold, has actually been found in the lagoon of Siecha. Other sites of ancient worship are still buried in the primeval forests, such as the great monuments of San Agustín near the head-waters of the Rio Magdalena, from which Alphons Stübel has brought us drawings.

To the south of Popayan a new world opens before us, — the kingdom of the Incas, in which a number of the most diverse elements, tribes of totally different origin and various development, were fused into an external unity. Peru — especially the seaboard region — is the paradise of archeologists. On the whole coast, extending over thirty degrees of latitude, from Tumbez to the Rio Maule, not a drop of rain falls the whole year through. The sandy soil is fertilized by rivers which, rising in the snow of the ranges lying just back of the coast, bring down in their long and tortuous course a mass of particles dissolved or suspended, and are carefully conducted by the hand of man over fields, gardens, and plantations. Along these rivers and canals populous cities and towns long ago arose, whose inhabitants were well trained in the arts of both peace and war. The dry sand has preserved their dead, wrapped in mummy-coverings, with their property, their clothes and orna-

ments, their weapons and utensils. The colors of their garments, the flesh still clinging to the bones, the metal and wood of the utensils, the food and amulets which were buried with them, are as perfect to-day as the mummies of ancient Egypt. Many thousands of drinking-flasks, jugs, and other vessels of clay have come to light from these graves. Upon them are depicted the most various ornaments, men, gods, beasts, whole battle-scenes, judicial processes, death-dances, and banquets. Unfortunately old Peru had no Saha-gun, to collect with equal diligence and intelligence the primitive traditions of the aborigines. The *Extirpacion de las Idolatrias* of Padre Arriaga offers us but a poor compensation. We lack the picture-manuscripts and the expositions of learned men, so that we stand face to face with this mass of phenomena almost without comprehension. All we can do for the present is to register the collected material and to seek analogies — for which not only the objects heaped up in the museums, but also the splendid publications of Reiss and Stübel and Professor Arthur Bässler give opportunity enough. One thing emerges clearly from such a survey as has been possible, — the difference between the Indians of the highlands and those of the coast, and between the civilizations of the two, as well as the distinct artistic style of the monuments and all kinds of antiquities found on the plateau of Lake Titicaca. There, at Puno and at Tiahuanaco, this difference is accompanied by a difference in language; but it may be traced far beyond the linguistic diversity, down to the coast, where Ica and Arica have long been known as places where antiquities of a distinct type were to be found. The sequence in time of the various civilizations may some day be determined with more or less certainty by such careful excavations as Max Uhle has now, for a number of years, been carrying on in Pachacamak; and no doubt it will be possible to deduce from the archeological material as yet unclassified an overlapping and fusion of indigenous civilizations with forms whose origin points to the highlands and the conquering Incas. This Inca influence may be traced plainly beyond the boundaries of their empire, by way of Ecuador towards the north, southward across the Rio Maule into Chile, and on the other side of the Cordilleras into the nearest parts of Argentina, the districts of Salta and Catamarca, where with the Spaniards the speech of the Incas, the Khechua, found its way.

But in another way the old Inca Empire was a point of departure. When Karl von den Steinen pressed on in 1883 from Cuyabá to the sources of the Xingú, he found there, to his surprise, a number of tribes similar in conditions of civilization, though differing in language, who were still living in the Stone Age, and to whom the knowledge of white men had never penetrated. The objects they

used, *beixu*-turners, whirring-boards, dance-masks, and other things he found here partly painted with geometrical ornaments, for which, in a way which seemed striking to him, objects with a definite non-geometrical figure were almost always named as prototypes. He was convinced that here he saw before him in its definite results the process of the evolution of a so-called geometrical *motif* out of a definite animal, human, or other figure which Hjalmar Stolpe demonstrated for certain regions in the South Seas; and his intelligent discussion of this question has proved extraordinarily stimulating in the most various directions. In the mean time, with the extension of these investigations, it became evident that, *e. g.*, the same triangle which the Bakairí called *ulúri* (a woman's garment) was explained by other tribes as a fish's tooth. Von den Steinen himself felt compelled in consequence to revise the views he had hitherto held. He now considers that a whole class of so-called geometrical ornaments arose out of textile patterns, but, when they were transferred from plaiting or weaving on to other materials and executed in engraving or painting, acquired an independent life of their own and ended by drawing into themselves a whole series of the most varied figure-meanings, according to what appealed to the artist or was suggested to him, and with no essential relation to the original geometrical patterns. Now the old Peruvian art of the different centres is simply full of such ornamental types taken from textile art. These, together with the figure-types which came to be used in textile work, seem to have found their way among the uncivilized tribes also, and to have furnished the suggestions for the decorations which we now meet with among tribes of the far interior of Brazil in the most varied forms, there to be interpreted and reinterpreted in sometimes extremely remarkable ways. To follow these migrations is a very attractive task, and offers another case in which archeology and descriptive ethnology must support and supplement each other.

The wide region of Argentina, the valleys lying below the Cordilleras, the Pampas, and Patagonia, formerly supported a number of half-civilized tribes, which have now dwindled to insignificant remnants or been absorbed into the Spanish-Indian mixed race. Through the labors of Argentinian scholars a mass of material has been brought to light, whose working-out has only just begun. Where the reports of the conquerors and missionaries give us scarcely more than the name of a tribe, we have now extensive dwelling-sites, including entire mountain-sides, fortifications, and burial-places. A large number of clay vessels have been found there, many of them of considerable size; stone or metal implements, and, in the tombs, even objects made of perishable material, — wooden bows, arrows, gourds with patterns burnt into them,

and bundles of cords, or llama-halters, with the hoofs of llamas tied up in them, to designate, it would seem (on the principle of *pars pro toto*), the herds of llamas which the dead man possessed, or was to possess in the other world.

Whether here, as some have contended, the presence of men in a very remote geological epoch can be demonstrated is a question which as yet should not be rashly answered. Even in North America it has not yet been possible to prove beyond a doubt the coexistence of man with the great mammals which are now either extinct or vanished from American soil, or to push back the antiquity of human habitation as far as the time when the glaciers of the north stretched down to the Delaware and the Ohio. The problem cannot be solved alone by archeology, but needs the coöperation of geology; though it is a noteworthy fact that it is precisely the geologists who have answered this question in the affirmative. Whatever discussions may still arise, it is quite to be expected that, next to archeology, which occupies itself with tribes that come down into historical times, an important place will be filled by the branch of science which concerns itself strictly with prehistoric ages in America, as that which is capable of demonstrating the existence of man in the geological era.

American archeology in general is on firmer ground. It will not, however, be unprofitable for us, while we are reviewing what has been accomplished, to seek to show how this science has been and how it ought to be pursued. Archeology, which forms only a part of anthropology, is an empirical science, and ought never to forget this character. This it has often done in the past; preconceived opinions have been allowed to influence conclusions, and have accounted for the frequently unsatisfactory character of the latter. We all know that the study of antiquity has a special interest for many men just because it is the study of antiquity, and that the interest grows in proportion as one is able to ascribe a greater age to the things which form the subject of study. We also know that men are naturally inclined to consider as obvious a common single cause for similar or related phenomena, and to presuppose this even where no grounds exist to support such a theory. These two tendencies have for a long time worked a great deal of harm to American archeology. Instead of working on the material facts at hand, people have exhausted their energies in theorizing as to how this continent was settled and whence it received its civilization, and in violent efforts to connect the civilizations which have arisen here with those of the Old World. In whatever part of the continent ancient remains have been found which offered no explanation on their face, they have assumed the presence of ancient races which have long ago vanished or migrated to other parts of the world;

and when the objects discovered displayed a relatively high state of development, they have been ready, without more ado, to assert positively a connection with the known tribes of advanced civilization. In this way they have found traces of the Aztecs in the Casas Grandes of Arizona, in the cliff-dwellings, and in the mounds; and they have conducted the Toltecs, the legendary representatives of a high civilization in Mexico, from the valley of the Mississippi into that country, and thence along the line of the Andes into Peru. Luckily we have now got beyond that sort of thing. What, however, we have not yet reached, and what we should earnestly strive for, is to establish empirically what the earlier students attempted to develop on the basis of theories which they took to be well-founded, — not only the existence on the continent of various civilizations, but their order of succession, and the influences to which they were progressively subjected. This has not yet been achieved, even for the two regions which have been most thoroughly investigated, the Mexican and the Central American. The great question, which of the two leading civilized races, the Maya and the Mexican, is responsible for the beginning of this civilization, or whether they both raised themselves on the shoulders of a third, is as yet unsettled. But the mutual influence of Maya and Mexicans is beyond question, and assumes a greater importance the further we penetrate into the essential nature of these civilizations, and the more we learn of their different sides and their points of divergence.

The question remains to be discussed how the archeological picture which the American continent offers has shown itself or can be made of service to the general science of all mankind, which we Germans usually call ethnology, while its followers here prefer the name anthropology. Archeology as such is only a branch of descriptive ethnography. I have tried in this brief sketch to show how our knowledge of the continent has been augmented in recent years through the labors of the archeologist. To give even a summary account of how at the same time American ethnography has gained both in extension and in depth would take hours, and is not my business. It is sufficient for me, in order to show what significant impulses have proceeded from both the archeology and the ethnography of America, to recall to you that the whole modern development of primitive sociology took its real beginning from the investigations of Lewis H. Morgan into the tribal constitution of the Iroquois, and that in the most recent researches into the philosophy of religion the old Mexican belief is beginning to play an increasingly important part. American archeology and ethnography are also of the greatest importance to general ethnology. So far as it has been possible to study the old remains and the old traditions, so far as philology gives us material for definite conclu-

sions, so far as the comparison of art-forms has been used as a basis for still further-reaching conclusions, nowhere as yet has the often-repeated assertion that the development of the tribes on this continent was the result of influences coming either eastward or westward from what we call the Old World found any support. On the contrary, the researches of the Jesup expedition have almost conclusively proved that in the northwest there took place an overflow of American civilization, a spread of American elements of population, to the Asiatic side of the Behring Sea. For that science, also, which tries to search out the mysteries of the laws which have governed the human mind in its development from its obscure beginnings, the observations which we have made or are in a position to make on American soil will be of greater importance than those made in any other part of the world. For the observations made here have all the advantages of pure experiment. That is the special privilege of American studies, and the special interest which attaches to them. To provide the material for that comprehensive science, the study of the human race as a whole is thus not only the real and greatest task of American archeology, but also its most rewarding. It will be a great joy to me if the conviction of this shall spread in ever wider circles, and bring to American archeology the new laborers of which it still has such pressing need.

SHORT PAPERS

MR. CLARENCE B. MOORE, of Philadelphia, read a paper before the Section of Archeology on "Aboriginal Urn-burial within the Limits of the United States," in which he took up the record of urn-burial, beginning with the Pacific Coast, following the customs eastward as their investigations demonstrated.

DR. WILLIAM C. MILLS, of Ohio State University, presented a paper to this Section on "Explorations of the Harness Mound," in which he described the largest mound of the Liberty group, named after the owner of the property and located nine miles south of Chillicothe, Ohio.

SECTION C—ETHNOLOGY

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(Hall 16, September 24, 3 p. m.)

CHAIRMAN: MISS ALICE C. FLETCHER, President of the Washington Anthropological Society.

SPEAKERS: PROFESSOR FREDERICK STARR, University of Chicago.

PROFESSOR A. C. HADDON, University of Cambridge.

SECRETARY: PROFESSOR F. W. SHIPLEY, Washington University.

ETHNOLOGY AND ITS RELATIONS TO OTHER BRANCHES OF ANTHROPOLOGY

BY FREDERICK STARR

[Frederick Starr, Associate Professor of Anthropology, University of Chicago. b. September 2, 1858, Auburn, New York. B.S. Lafayette, 1882; M.S. and Ph.D. Lafayette, 1885. In charge of Department of Ethnology, American Museum of Natural History, New York, 1891; Dean of Science Department, Pomona College, Claremont, California, 1892-95; Registrar, Chautauqua University, 1890-91. Fellow of American Association for the Advancement of Science, American Anthropological Association; Honorary Member, Fendlon Society, London; Honorary Corresponding Member of the Italian Society of Anthropology, Ethnology, and Comparative Psychology; Paris Société d'Anthropologie. Author of *Indians of Southern Mexico*; *Physical Characters of Indians of Southern Mexico*, etc.]

INVITED, but a few days since, to take the place of a foreign speaker, who is unable to be present, and with the time since fully occupied with an unexpected burden of labor, I have been unable to prepare for this occasion such a paper as should justly be expected. In the few moments which it will occupy, I shall ask your attention to three points, which are either new or sadly neglected, which seem to me worthy of consideration by ethnologists.

First. In discussions in the history of culture, we are prone to assume that primitive man had no experience and no accumulation of knowledge gained from the experiences of the past; that he had to make the absolute *beginnings* in culture; that he was a being capable of great things, but with nothing. This assumption has been practically universal, and has met with no remonstrance. It is, however, highly improbable; nay, impossible. Primitive man, if the product from animal ancestors, must have inherited many things from lower forms. Many habits, mental attitudes, ideas, beliefs, must have been developed during prehuman existence. This suggestion gains force from two significant works recently published — Groos's *Play of Animals* and Atkinson's *Primal Law*. The careful reading of Groos's work proves that

man's ancestral form must indeed have been sadly inferior, if it had not gained through play a mass of valuable results, which man inherited as no mean capital. The same author's *Play of Man* adds emphasis to this view, though neither book was written to establish the point which we are making. Mr. Atkinson's *Primal Law* is a remarkable book, full of suggestion. We need not accept all of its conclusions, but his general argument is startlingly useful. Why should we seek the origin of certain curious features of social organization in humanity, when their very nature suggests a source in the brute ancestors? Mr. Atkinson has pointed us wisely, even though he may not have established all his conclusions. What is true in regard to the play-impulse with its valuable results and in regard to early sociological taboos, must be true of many other fields of human activity. The *beginnings* are to be sought and studied, not in the primitive man, but in the brute ancestors. If this assumption is granted, what added importance the subject of animal psychology assumes for the ethnologist and how particularly important the little-investigated psychology of the simian forms becomes! We ought to know just what achievements these nearest of our animal relatives have made, — their emotions, impulses, ideas, devices, inventions, institutions. Not, of course, that such a knowledge, even if complete, will give us an accurate or an adequate idea of what man owes to his predecessors. These living simian forms are *not* in our ancestral line. It is because they differed from our actual ancestors that they differ from us to-day. But their psychology and their life will give us a nearer conception of primitive man's inheritance from prehumanity than we can otherwise gain.

Second. Another point which seems worthy of attention is the close relation of human types to local faunas and floras. This was first brought strongly home to me by the accidental observation that the area of the extended cultivation of maguey, — the plant from which the famous intoxicant *pulque* is derived, — and the area of the atomis in Mexico practically coincides. Maps have not been prepared to demonstrate this coincidence, but I believe they would show it to exist. This impression was strengthened by an examination of Professor Seth E. Meek's map of the distribution of fresh-water fishes in Mexico. Here, again, time has not permitted that careful and rigid comparison which alone would warrant a final statement, but the areas of fish faunas appear fairly to coincide with the areas of human linguistic groups. In this connection we may refer to a recent paper by C. Hart Merriam, in *Science* of June 17, 1904, *Distribution of Indian Tribes in the Southern Sierra and adjacent parts of the San Joaquin Valley, California*. In this paper, without actually making any statement just such

as we are considering, the author shows that the tribes of Indians investigated are definitely related to a certain faunal and floral area; where it stops, there are no Indians. The point for emphasis, if the idea presented is true, is the smallness of these areas; that a special human type, and a local culture, seems closely related to and connected with a little local group of plants and animals. The idea may be compared with the old ideas of Agassiz, for whom each great human race was a member of a special fauna with a well-defined, but large, geographical area. For Agassiz the facts proved *polygenism*. The suggestion here made is for many more local types than Agassiz ever claimed, with much narrower range and with small, local faunal and floral groups. And, far from demanding a polygenistic explanation for these types, we should claim that for man, as for animals and plants, variation is easy and prompt. Environment produces a ready response, and plants, animals, and man come into harmonious relations not only to outer influences, but also to each other.

Third. These considerations lead up to the third point, which seems at first inconsistent with the theory of such ready variation, prompt adaptation, and extreme localization of types. Are we not constantly driven to recognize continental types of mankind? Do not the more recent classifications show this tendency? Do not Brinton and Keane both, hostile as they were, come to the idea that the great races are *continental* types? Are not the races to which Dr. Dorsey has just referred continental? Are not both Brinton and Keane actually driven to add to their four races others which also have a definite and large area of occupancy? When we once leave the simple, triple subdivision of the species, as Cuvier gave it, are we not driven to recognize perhaps six great races — and those geographically named? Do not the words European, African, Asian, American, Australian, Malaysians, all geographical, immediately call up a great racial type? For me, these types are a reality, and are the result of the great continental environment, taken in its entirety, upon its human population. It is commonly assumed that these types were early produced, while the new species was plastic, during a period of accelerated evolution. This is probable and granted. Where I differ from some, perhaps all, of my hearers is in believing that these same types are now being produced, and will continue to be produced, within the continental areas. Asia is, has been, and will be the continent of the yellow race; South Africa is and will be, as it has been, the continental area that makes black men with woolly hair. So of the other great areas, they may be expected in the future to produce the same types of humanity which they have produced in the past

The apparent inconsistency between this idea and the preced-

ing is freely admitted. For the most part it is met by the suggestion that the local types of man, occurring in small but definite areas, are sub-types of the great continental type within the district of which they occur. They are not, however, only minor types diverging from the fundamental under the action of differing, little, environmental areas; they are also, some of them originally, differing immigrants who are converging toward the continental type under the larger environmental area. Study Deniker's ten European types with this double possibility in mind.

No one can better appreciate than myself the difficulty presented by the existence in one and another continent of long-settled, well-marked human types differing completely from the continental type, and apparently showing no tendency to approximate to it. My Ainu are a case in point. They are a white-skinned, hairy-bodied, bearded, "straight-eyed" people, who were in Japan before the Japanese. Why have they not assumed the yellow skin, glabrous body, and "oblique eyes" of the Asian race? The fact that we cannot say does not shake my faith in the reality of continental types nor my belief that these will be continuously reproduced, in general, by the action of the continental environment upon new masses of immigrants.

At all events, these three points are submitted for consideration, — our debt to the prehuman ancestors, the close relation between local human, animal, and plant groups, and the question of the existence and significance of continental types of man.

ETHNOLOGY: ITS SCOPE AND PROBLEMS

BY ALFRED CORT HADDON

[**Alfred Cort Haddon**, M.A., Sc.D., F.R.S.; University Lecturer in Ethnology, Cambridge, since 1900; Senior Fellow, Christ's College. b. London, May 24, 1855. Professor of Zoölogy, Royal College of Science, Dublin, 1880-1901; made zoölogical and ethnological investigations in Torres Straits, 1888-89; organized and conducted the Cambridge Anthropological Expedition to Torres Straits, New Guinea, and Sarawak, 1898-99. **Author of** *Introduction to Embryology* (1887); *The Decorative Art of British New Guinea* (1894); *Evolution in Art* (1895); *The Study of Man* (1898); *Head-Hunters: Black, White, and Brown* (1901); and numerous papers and memoirs on zoölogical and anthropological subjects.]

PERHAPS there are few branches of knowledge in which it is so difficult to define its subject-matter as is the case with anthropology. The comparative newness of the study and the lack of uniformity in terminology among those who prosecute it are perhaps mainly responsible for this indefiniteness; further, the inherent complexity of the phenomena that are studied has to be taken into account. Precision of nomenclature is more difficult in the biological field than in inorganic nature, and the more complex the life the harder the task becomes. Thus it transpires that we who study the actions and thoughts of various races of men and their social groupings are sometimes at a loss to know how to name our studies with precision or to define their limits. I have had the honor of being invited to address this Congress on Ethnology, but as no information was given as to what the organizers of the Congress understood by that term, I feel it incumbent upon me to state as briefly as may be what I believe ethnology to be.

Anthropology, which is the Science of Man, clearly falls into two main divisions, — the one which deals with the natural man (*ἄνθρωπος* or *homo*), the other which is concerned with man in relation to his fellows, or, in other words, with the social man (*ἔθνος* or *socius*).

The first group of anthropological studies includes such subjects as the comparative anatomy (somatology), physiology, psychology, development, paleontology, classification, and the distribution of the varieties of man. It was proposed by Dr. Brinton to include all these and other subjects under the term "somatology," and this classification has been adopted by the organizers of this Congress; but it appears to many British anthropologists that "anthropography" is a preferable name, the older term "physical anthropology" being somewhat cumbersome, and the restriction of the word "anthropology" to this group, as is so frequently done on the Continent of Europe, leaves no distinctive name for the whole subject. Systematic, or taxonomic, anthropology, that is, the classification of

the varieties of man with their geographical distribution, is often spoken of as "ethnology," but this is to be deprecated, as the systematist deals with bodily as opposed to social characteristics; Dr. Brinton ¹ termed this division "ethnography."

The second group of anthropological studies deals with everything that bears upon the domestic and social life of men. A description of a single group of mankind is sometimes described as ethnography, and in this sense it should be a monographic study including alike the physical and psychical characters of, and all that is made, done, and thought by, the group under consideration. Ethnology is now becoming recognized as the term for the comparative study of groups of men, but it is by no means easy to distinguish theoretically between ethnology and sociology, for by its etymology the latter signifies the science of the social man. Some authors make ethnology a part of sociology, others consider sociology a department of ethnology, while a few regard them as convertible terms.

The simplest way out of the difficulty is frankly to admit that no hard and fast line can be drawn between the two subjects, but, indeed, this is always the case between allied sciences. Who can now define chemistry so as to separate it from physics, or delimit botany from zoölogy? Ultimately we have to recognize that our several studies of nature are merely so many "spheres of influence;" for the sake of convenience we attempt to pigeon-hole our investigations, but sooner or later the artificial barriers are broken down.

For example, perhaps very few sociologists would consider that a study of implements, boats, or houses falls within their province, but it is otherwise with the ethnologist. These objects are not regarded by him as, so to speak, merely superior claws, feet, or shells for individual men, but as the organs by which social man lives and by which he acts upon his fellows. The ethnologist rightly busies himself in part with these as he realizes that every implement or construction has a history, and he endeavors by patient inquiry to discover how and where it first arose and the influences that have modified its form or affected its ornamentation. The superiority of metal over stone, or of one kind of metal over another, or for certain purposes of the bow and arrow over the spear, of the cross-bow over the long-bow, and of guns over bows; or the social effects of a canoe or of a communal house, or those caused by hunting or agricul-

¹ Dr. Brinton's fly-sheet of a proposed classification of the anthropologic sciences was published in the *Proceedings* of the American Association for the Advancement of Science, 1892: I reprinted it as Appendix A in *The Study of Man*. Anthropology was divided by Dr. Brinton into (1) Somatology — Physical and Experimental Anthropology; (2) Ethnology — Historic and Analytic Anthropology; (3) Ethnography — Geographic and Descriptive Anthropology; (4) Archeology — Prehistoric and Reconstructive Anthropology.

ture are considerations that do not concern the ethnologist alone; for the effect upon society of a superior weapon, a canoe, or of a house may be far-reaching, and all sociologists acknowledge the intimate connection that exists between occupation and social conditions.

On the other hand, the construction of a theory of the origin, growth, and destiny of humanity, or the enunciation of principles applicable to the ordering of social life are alien occupations to the ethnologist as such.

Probably the majority of ethnologists will admit that under their science may be classed those cultural activities which are broadly included under the arts, crafts, institutions, languages, opinions, and beliefs of all peoples. But here the old difficulty reappears, Where is the line to be drawn? Most sociologists appear to draw this line at civilization; they reserve to themselves the right to study the civilized states, while to the ethnologist they relegate the uncivilized communities.¹ It may be desirable to call the latter ethnical societies or ethnogenic associations, and the former demotic societies or demogenic associations;² but in practice it is often exceedingly difficult to determine whether a given community can be designated as civilized or uncivilized.

As a matter of fact, a distinction of this nature does obtain for practical purposes. Implicitly, rather than explicitly, the ethnologist does mainly confine his attention to the less civilized peoples or to the less cultivated classes of culture-peoples; but this is a matter of convenience, and he considers himself quite justified in making an occasional excursus into even the highest civilizations.

The difficulty of discriminating between two allied subjects, such as ethnology and sociology, is repeated when the field of history is considered.³ Historians themselves are divided in opinion concerning the legitimate scope of their study; some claim it as a science.⁴ others describe it as the artistic and emotional treatment of the whole past of mankind.⁵ The two views, whether history is to be regarded as science or as literature, are irreconcilable only in their extremes. Historical data require to be collected, authenticated, and classified according to that method to which the term "scientific" is often applied, but to which the designation "critical" is equally

¹ Lester F. Ward, *Pure Sociology: A Treatise on the Origin and Spontaneous Development of Society*, 1903, pp. 15, 33.

² F. H. Giddings, *The Principles of Sociology*, 1896, pp. 157, 299; cf. also pp. 26, 27, 33.

³ "It is often asked, when should Ancient History be supposed to begin? Can a practical line be drawn? Archeology overlaps what we can strictly call History, but it goes much farther back: it revels in the 'prehistoric.' So too Anthropology, of which in its widest sense History is but a branch." W. E. Heitland, "The Teaching of Ancient History," in *Essays on the Teaching of History*, Cambridge, 1901, p. 38.

⁴ J. B. Bury, *An Inaugural Lecture*, Cambridge, 1903, pp. 7, 42.

⁵ G. M. Trevelyan, "The Latest View of History," *The Independent Review*, 1904, I, p. 395.

applicable. The presentation, however, of historical facts should be in that lucid manner which is the essence of style, adorned, it may be, but not obscured, by those graces which may be termed literary; but, after all, these remarks apply equally to the physical or biological sciences.

Probably there is not much real difference of opinion concerning the critical treatment of historical data and their arrangement and elucidation. Much of this lies beyond the sphere of the ethnologist, but it is otherwise with political science, which, according to some authorities, is the central science around which historical facts and problems should be grouped, and which coördinates them. Professor Seeley asserted ¹ that political science began with the classification of states, then proceeded to study the functioning and development of a state, and later to the mutual relations of states. It is therefore evident that the student of political science must turn to the ethnologist for data to assist him in his investigations.²

The science of history certainly does not cover the whole field of history; by its side, as Mr. Trevelyan has pointed out, three principal objects of history may be recognized: "to teach political wisdom; to restore our heritage in the ideals of the past and the lives of the noble dead; and to make us feel the Poetry of Time." Political science should teach political wisdom, and history through literature has for one of its tasks the education of the emotions.

It has been stated by Professors Langlois and Seignobos that: "The historian works with documents. . . . Every thought and every action that has left no visible traces, or none but what have since disappeared, is lost for history; is as though it had never been. For want of documents the history of immense periods in the past of humanity is destined to remain forever unknown. For there is no substitute for documents: no documents, no history."³

The philosophical historian understands by history something broader and deeper than documentary history; he does not confine his conception of history to the social and political interrelations of certain European countries, or "periods,"⁴ but regards in his

¹ J. R. Seeley, *Introduction to Political Science*, 1896, pp. 18, 361.

² As Oscar Browning states, "It appeals at once to the statesman and to the antiquarian; it is equally interesting to the politician, to the student of the most ancient races, and to the explorer of existing rudimentary societies. It is a great thing to have discovered that this is the best clue to the maze of annalistic facts. The merit of this discovery belongs justly to Professor Seeley and to Professor Freeman." *The Cambridge Review*, 1885, vi, p. 178, and pamphlet on *The Proposed New Historical Tripos*, 1897, p. 15.

³ C. V. Langlois and C. Seignobos, *Introduction to the Study of History*, 1898, p. 17.

⁴ As J. R. Tanner points out: "What is philosophically desirable is not always practically possible, and though the historian can sometimes afford to be a philosopher, the teacher of history must be a man of business. Experience shows that as a matter of business subdivision is essential." "The teaching of Constitutional History," in *Essays on the Teaching of History*, 1901, p. 51. My remarks do not apply to those who for educational reasons or for purposes of research are obliged to restrict themselves to limited periods, but to those who

purview all conditions, ages, and climes, or, in other words, he studies universal history.¹ Hence it becomes necessary to throw every possible light upon those shadowy beginnings of the culture-nations when all knowledge was stored in human brain-cells. Tradition has handed down to history only the most fragmentary traces of the unwritten lore, and these are totally inadequate to supply the documentary historian with sufficient data to complete his narrative. Here the ethnologist comes to the aid of the baffled historian and supplies him with accounts of existing peoples who have dallied along the road that leads to civilization, and amongst these laggards there can be selected parallels to the various phases through which various civilizations have passed. As geography and ethnology are the open pages of those portions of earth-history, of which stratigraphy and archeology are the pages already turned down, so the history of the earth (geology) and the history of man are consecutive narratives that incorporate the past and the present.

For the sake of convenience archeology is generally regarded as a subject of equal rank with anthropography and ethnology, but it bears the same relation to ethnology that paleontology does to biology. The finds are fossil implements, shards, house-sites, and the like, but, as the paleontologist must be a zoölogist if his dry bones are to be vivified, so must the archeologist turn to ethnology for existing parallels or for suggestions as to the probable use or meaning of particular objects; hence the distinction between the finds of the archeologist and the collections of the ethnologist is not one of degree but merely a question of chronology.

It is convenient to speak of the less advanced people in civilized communities as the "folk," and folklore is what the folk think and do, and its essential character is that it is traditional. Practices were observed and copied, and in this way there has accumulated a vast amount of traditional thought and usage that has been handed down from the childhood of man, and is still being transmitted. Although the bulk of folklore is current among the less educated classes, there is a good deal persisting among the so-called higher classes, and new vagaries are constantly appearing.²

speak as if this method was, to say the least of it, the most important part of history.

¹ "What do we mean by a Universal History? Briefly: a History which shall (first) include all the races and tribes of man within its scope, and (secondly) shall bring all these races and tribes into a connection with one another such as to display their annals as an organic whole. Universal History has to deal not only with the great nations, but also with the small nations; not only with the civilized, but also with the barbarous or savage peoples; not only with the times of movement and progress, but also with the times of silence and apparent stagnation. Every fraction of humanity has contributed something to the common stock, and has lived and labored not for itself only, but for others also through the influence which it has perforce exercised on its neighbors." James Bryce, "Introductory Essay," in *The World's History: A Survey of Man's Record*. Edited by H. F. Helmolt, 1901, I, p. xxi.

² Two examples will suffice: "A lady living within the shadow of the walls of

Folklore bears the same relation to the study of comparative custom and belief that archeology does to ethnology and history, but with this difference, that the main data of archeology are tangible objects, whereas those of folklore are intangible: folklore may thus be described as psychical archeology. To take a zoölogical parallel, archeology and folklore bear the same relation to ethnology as paleontology bears to zoölogy, for the latter includes the study of the survivals of earlier types as well as the more differentiated forms that constitute the enormous majority of existing animals.

The historian, also, whether he deals with the history of ancient civilizations, or even with that of early Europe, is dependent upon the archeologist, not only for the explanation of his documentary accounts, but for the accumulation of fresh data. The classical scholar, the Egyptologist, the Assyriologist, and others who interest themselves in the resurrection of past action and belief fully recognize that the remains unearthed by the spade are of as much value to their studies as are written documents. No better example of this can be found than in the monumental translation and commentary of *Pausanias's Description of Greece* by Dr. J. G. Frazer, in which the text of the somewhat commonplace Greek sight-seer is illumined with a great wealth of archeological lore, and the strange incidents recorded by the ancient writer are matched by suggestive parallels from European folklore or from the vast storehouse of Dr. Frazer's ethnological erudition.

"What a 'cabinet of specimens' is to a professor of mineralogy, what an 'anatomical museum' is to a professor of anatomy, the tribes of the South Sea Islands may be to the professor of history, whether he teach from a chair or by means of a printed book. If only a small fraction of the time and intellectual effort devoted to the investigation of obscure points in the history of early Egypt, early Mesopotamia, early Greece, or early Italy — or indeed of early Britain — had been added to the little which has been devoted to South Sea Island investigations of a similar kind, those points would have been cleared up more easily." So writes Vice-Admiral Sir Cyprian Bridge¹ and he proceeds to adduce exam-

Harvard University maintains that carbons from arc lamps are a sure preventive of neuralgia." Frank Russell, President's Address, American Folk-Lore Society, *Science*, 1902, p. 569. "In many motor-cars is suspended a perforated stone, usually a sea-rolled flint with a natural bore; this stone is supposed to act as protective amulet. It is supposed to confer safety on the fastest traveling motor-car, and there is many a speedy driver who in his heart ascribes his immunity from accidents to the strange power of the perforated pebble." *Daily Chronicle* (London), March 14, 1903.

¹ Cyprian A. G. Bridge, Introduction to *The Caroline Islands*, by F. W. Christian, 1899, p. 6.

ples, culled from his own wide experience in various parts of Oceania, of present-day illustrations of events that happened before the walls of Ilios, or parallels in custom between the Micronesians and the ancient Germans. In my own small experience¹ I have passed in a week or two from the stone-age savagery of the Papuans to the barbarism of Borneo, which recalls in many respects the stage of culture at which Europe had arrived at the time when iron was replacing bronze.

It has often been noted that the history of human culture is largely the history of the domination of nature by man; at first man was simply a creature of circumstances like any other animal, then gradually he commenced his work of subduing the earth. The donning of clothes and the discovery of fire rendered man less dependent upon purely geographical conditions. As the Right Honorable James Bryce says: "We need not pursue his upward course, at every stage of which he finds himself better and still better able to escape from the thralldom of nature, and to turn to account the forces which she puts at his disposal. But although he becomes more and more independent, more and more master not only of himself, but of her, he is none the less always for many purposes the creature of the conditions with which she surrounds him. . . . In the earlier stages he lies helpless before her, and must take what she chooses to bestow . . . but in the later stages of his progress he has, by accumulating a store of knowledge, and by the development of his intelligence, energy, and self-confidence, raised himself out of his old difficulties. . . . As respects all the primary needs of his life, he has so subjected nature to himself that he can make his life what he will. . . . Thus his relation to nature is changed. It was that of a servant, or indeed that of a beggar, needing the bounty of a sovereign. It is now that of a master needing the labor of a servant, a servant infinitely stronger than the master, but absolutely obedient to the master, so long as the master uses the proper spell."² The elucidation of this evolution of culture has been the work of ethnology.

The interrelations between man and his environment are manifest in multifold ways, since, as is evident to all, the physical conditions of a country, including the climate, the vegetation, and the indigenous animals, affect the life of the human inhabitants of that country. The main occupation of a people reacts upon its social life; thus, within certain limits, the character of the organization of the family, the nature of larger social groupings, and the regulation of public life are products of the environment. Not less has the environment impressed itself upon the arts of life and

¹ *Head-Hunters: Black, White and Brown*, 1901.

² J. Bryce, *loc. cit.*, pp. xxvi, xxvii.

as much also upon the complex activities that may be placed under the general term of religion. The religious conceptions of a hunter must necessarily differ from those of a shepherd or of an agriculturist, and the religion of desert-dwellers must find a different expression from that of jungle-folk.

Primitive men simply gathered vegetable and animal food, later they became definite hunters, and hunting-folk are still the least advanced of any people; they are what are termed "savages."

Under stress of circumstances certain peoples devoted themselves to agriculture, and, according to the local conditions, cultivated certain plants, each of which definitely reacted on the social life of the agriculturists. Other peoples became herders instead of hunters of animals, and they necessarily were at first very mobile. Fishing-populations generally form characteristic communities that gain command of the seaboard.

These four types of societies, with their several modifications, occurred in Europe in prehistoric times as well as in the early historic period, and the various ways in which they reacted upon one another were very marked.

The agricultural peoples gradually brought the plains and forest lands into cultivation. As they acquired wealth, they were despoiled by the herdsmen, who, being horsemen, could readily overrun the country and defy pursuit. The agriculturists could not well defend themselves, being unwarlike and footmen; but it depended upon the degree of the social evolution of the herdsmen how far the results of this conquest were lasting. Attila, Genghiz Khan, and Tamerlane neither organized nor administered the conquered populations; they passed like a hurricane, and scarcely left more lasting traces of their progress. The Turks are still only encamped in Europe, they are simply superimposed upon the peoples they dominate, and there is practically no assimilation; similarly the Manchus are aliens in China. On the other hand, the early Teutonic horsemen forced themselves upon the agriculturists of Gaul and permanently overlorded them; and the highly organized, cultured, religious enthusiasts who were trained in the Sahara established themselves in Spain for centuries.

The Phœnician, and later the Greek, fishermen developed into more or less piratical merchants in the Mediterranean, as have the Malays in the East Indian Archipelago. In the North Sea the Scandinavian fishermen raided Ireland for gold and treasure, or settled in Britain and Northern Gaul, their leaders becoming aristocratic landowners and rulers of the people. A similar history was repeated in Slavia by the Scandinavian Varangians; thus it was that different branches of the same race gave their names respectively to England, France, and Russia.

The foresters and the miners, as such, have played only a passive part in the history of Europe.

Speaking broadly, we may say that human societies are molded by physical environment, conditioned by biologic environment, and stimulated by ethnic environment.

As human societies become more complicated, their interrelations grow more complex; but in one form or another the struggle of classes continues. For the elucidation of the earlier phases of these and similar social or historical occurrences recourse must be had to the ethnologist, for it is his province to record the social constitution and the social kinetics of existing backward peoples, and it is only by these comparative studies that light can be thrown upon the past history of nations.

Have we, however, a right to restore the past by an appeal to the present? The labors of such students as Andrée, Bastian, Durkheim, Frazer, Gerland, Hartland, Post, Ratzel, Robertson Smith, Steinmetz, Tylor, and others have, in the words of Dr. Brinton, proved there is something universal in humanity. "Its demonstration is the last and greatest conquest of ethnology, and it is so complete as to be bewildering. It has been brought about by the careful study of what are called 'ethnographical parallels.'" ¹ Dr. Post does not hesitate to say: "Such results leave no room for doubt that the psychical faculties of the individual, as soon as they reach outward expression, fall under the control of natural laws as fixed as those of inorganic nature." ² "As the endless variety of arts and events in the culture-history of different tribes in different places, or of the same tribe at different epochs, illustrates the variables in anthropologic science, so," continues Dr. Brinton, "these independent parallelisms prove beyond cavil the ever-present constant in the problem, to wit, the one and unvarying psychical nature of man, guided by the same reason, swept by the same storms of passion and emotion, directed by the same will towards the same goals, availing itself of the same means when they are within reach, finding its pleasure in the same actions, lulling its fears with the same sedatives." ¹

On the other hand, absolutely necessary and invaluable as is the comparative method, it should not be abused. Things which are apparently similar need not necessarily be the same, for, as the biologists have long taught, analogy and homology are two very different things. Thus it is conceivable that two customs or simple ceremonies may resemble one another so closely as to appear quite similar, but, however convergent their outward forms

¹ D. G. Brinton, "The Aims of Anthropology," *Proceedings, American Association for the Advancement of Science*, 1895, XLIV.

² A. H. Post, "Ethnologische Gedanken," *Globus*, LIX, no. 19.

may be, if the motive for their performance is different we must not regard them as identical. The masters of the comparative method are fully alive to this danger, but it is one into which the enthusiastic beginner is apt to fall, and all the more readily as it is very difficult to ascertain the true motives for a given custom, and, too often, the performance itself has been very imperfectly recorded.

So far I have considered what may be regarded as those aspects of ethnology which add to the sum of human knowledge; but we may safely urge that part of the business of ethnology is to provide data which can be utilized by the practical politician, and possibly at no very distant period this fact will be clearly recognized by those who aspire to a career in affairs, as well as by the faculties of those institutions where men are trained for public life. But, I would again assert, the practical application of ethnological data to current statecraft is not the province of the ethnologist.

"To the aspirant for honors in the diplomatic service," says Dr. Frank Russell,¹ "anthropology offers an admirable training. He learns the significance of the racial factor in national welfare; the measure and condition of progress; the principles of ethnologic jurisprudence; and also the characteristics of the particular people among whom his duties lead him.

"For the legislator, anthropology must become a necessary preparation. America has problems whose solution calls for the widest knowledge of races and cultures. Such knowledge, free from political bias and hereditary prejudice, can best be gained by the study of the science of man.

"Anthropology prepares the lawmaker and the jurist for the task of coping with crime. Criminal anthropology has explained the character and causes of criminality and degeneracy, and led to revolutionary changes in the methods of crime prevention."

As Dr. Brinton has pointed out, the branch of anthropology, which has for its field the investigation of the general mental traits of various peoples, for which the Germans have proposed the name Characterology (*Karakterologie*), "is that which offers a positive basis for legislation, politics, and education, as applied to a given ethnic group; and it is only through its careful study and application that the best results of these can be attained, and not by the indiscriminate enforcement of general prescriptions, as has hitherto been the custom of governments."² Most civilized nations have living within their borders groups of people who differ in race, language, custom, and religion from the bulk of the

¹ F. Russell, "Know, then, thyself," *Journal of American Folk-Lore Society*, 1902; *Science*, 1902, p. 570.

² D. G. Brinton, *loc. cit.*

population. The arbitrary politician seeks to force all such into his Procrustean bed of wont and faith, as, for example, Russia is attempting to do in her Baltic provinces and in Finland; but surely there is a more excellent way.

Perhaps still more are sympathy and knowledge required by those who have to deal with native races. There can be no question but that a full knowledge of local conditions and a sympathetic treatment of native prejudices would materially lighten the burden of government by preventing many misunderstandings, and thus, by securing greater efficiency, would make for economy.

To look at the matter from the lowest point of view, even a slight frontier trouble means a direct expenditure for the local executive and a stagnation of trade. Commerce is, as it were, a sensitive barometer that fluctuates with every small variation of pressure in the political firmament and the pecuniary loss to a country is not to be measured by the actual expenditure consequent upon a trouble with natives, so much as by the indirect loss to the community at large; this can rarely be estimated, but it is none the less real.

"To the man of affairs," writes Professor W. Cunningham,¹ "economic history may prove of interest from quite another reason — by furnishing a clue to unfamiliar habits and practice in the present day. The expansion of Western civilization has brought Europeans and Americans into the closest contact with many barbarous and half-civilized peoples, whose usages and habits are strange to us. For purposes of trade it is convenient to understand their methods of dealing; while the administrator who rules over them cannot easily see how the incidence of taxation will be distributed in their communities or what are the possibilities of social oppression against which it is necessary to guard. Some of the most regrettable blunders of the English Government in India have been due to an inability to understand the working of native institutions. A careful study of the past of our own race, or of the earlier habits of other peoples when natural economy still reigned, would at least have suggested a point of view from which the practical problems in India might be more wisely looked at. By means of analogies drawn from the past we may come to understand the advantage, under certain circumstances, of fiscal methods that seem to be cumbrous, and the danger of introducing modern improvements in a polity that is not prepared to assimilate them."

There are higher grounds than those of mere expediency for the carrying-out of this policy, and there ought to be no need to insist upon this point of view. Fortunately there are not lacking

¹ W. Cunningham, "The Teaching of Economic History," in *Essays in the Teaching of History*, 1901, p. 46; cf. also W. F. Flinders Petrie, *Report of British Association for the Advancement of Science*, 1875, pp. 820-824.

examples of backward peoples being helped by the wise leadership of Europeans. I may instance the cases of British New Guinea,¹ Torres Straits,² and especially that of Sarawak,³ where many varied tribes are helped, under the "mild despotism" of His Highness Rajah Sir Charles Brooke, to govern themselves; the central idea of the Government being the benefit of the natives and the gradual betterment of their condition by natural growth from within, and this is successfully accomplished by a sympathetic knowledge of the people.

Other examples of wise administration of native states by Europeans could easily have been adduced, but I preferred to limit my remarks to those regions that have come under my personal observations. May I be permitted to utter one word of warning? For social evolution to be efficient and permanent it should be the result of a response to needs felt by the people themselves, and consequently such progress is usually very slow, for even the recent rapid advance of Japan is the result of long years of discipline and training, without which she could not have seized her opportunities and improved upon her teachers. The Western world is passing through a phase of "hustle" which also manifests itself in a tendency unduly to accelerate the cultural evolution of backward peoples.

We have now to consider the problems of ethnology and the direction the development of the science should take in the immediate future. From almost whatever point of view we regard history, we find that the comparative studies of the ethnologist afford explanations of historical phenomena which the historical records are usually too imperfect to elucidate with sufficient detail. As a matter of fact it is hardly going too far to suggest that in the existing state of our knowledge the present explains the past more than the past explains the present. Hence the pressing need for complete ethnological investigations before the data are lost.

I may be wrong, but it appears to me that there are few special problems in ethnology that require elucidation to the exclusion of others. Some departments of inquiry are of greater importance in the cultural history of man than are others, but owing to the far-spreading interactions of human ideas and deeds, it is often very difficult to pronounce with any degree of certitude that a particular branch of inquiry is of such relative unimportance that it can safely be neglected, or even merely postponed.

It may not be unprofitable, however, to glance at the five groups of subjects,⁴ which, as I have previously stated, are regarded by

¹ W. Macgregor, *British New Guinea: Country and People*, 1897, pp. 41, 97.

² *Reports of the Cambridge Anthropological Expedition to Torres Straits*, 1904, v p. 264.

³ *Head-Hunters: Black, White, and Brown*, 1901, p. 293.

⁴ These five fields of ethnological study were formally stated by J. W. Powell

certain ethnologists as the main divisions of their science, and to indicate some of the lines that require investigation.

Esthetology embraces the study of the activities of mankind connected with more or less spontaneous sensations of pleasurable character. It has been said that among primitive peoples these activities appeal chiefly to the senses, and among the more advanced peoples they appeal largely to the emotions and to the purely intellectual faculties.

Of late years considerable attention has been paid to the subject of decorative art, and there are few subjects studied by ethnologists which have such a wide range of interest as has this. It is being abundantly proved that, speaking generally, the majority of designs and patterns have a definite significance, and thus they are not merely pleasing and meaningless dispositions of form, or color, as so often are those of modern decorative artists. There is only one possible method of discovering the real meaning of any particular design, and that is by inquiry in the field, and even then it is not always possible to get all the information that is desired, for, as has been shown by von den Steinen,¹ Kroeber,² Boas,³ and others, the same simple design may have different meanings, and often it is the original designer alone who knows precisely what was the idea that a particular decoration was intended to record; at all events, this is the case with the Plains Indians. How mistaken, therefore, is it for students to rely solely upon museum material, as still is too much done!

What do we really know about the music of most of the backward peoples?

The amusements of peoples deserve more careful study, but this is becoming increasingly difficult, owing to the recent rapid diffusion of alien culture among native races. A comparative study of games is being made by Culin, based mainly upon the collection in the Free Museum of Science and Art in Philadelphia; but here also much work must be done in the field before trustworthy results can be obtained.

in the Introduction to the *Sixteenth Annual Report of the Bureau of American Ethnology*, 1894-95 (1897), when the term "sophiology" was introduced (p. xviii). They were amplified by W J McGee in an address on "The Science of Humanity" delivered before Section H of the American Association for the Advancement of Science, Detroit, August 9, 1897 (*cf. American Anthropologist*, 1897, p. 241; *Science*, Sept. 17, 1897, p. 413, and *Annual Report*, American Association for the Advancement of Science, vol. LXVI, p. 293; also *cf. American Anthropologist* (N. S.) I, 1899, p. 401). Major Powell elaborated his ideas in a series of essays published in the *American Anthropologist* (N. S.) I, 1899, pp. 1, 319, 475; II, p. 603; III, p. 51.

¹ K. von den Steinen, *Unter den Naturvölkern Zentral-Brasiliens*, 1894, pp. 258-270.

² A. L. Kroeber, *American Anthropologist*, 1901, III, p. 308; *Bulletin*, American Museum of Natural History, 1900, XIII, p. 69; 1902, XVIII, p. 1.

³ F. Boas, *Popular Science Monthly*, Oct., 1903; Supplement to Am. Museum Journal, IV, no. 3 (Guide Leaflet to Am. Mus. Nat. Hist. no. 15).

Whatever department of esthetology is studied, not merely must the objects or facts be collected, and their significance ascertained, but ever must one remember that they all have a psychological significance, and this too must be studied in the field; a highly suggestive presentation of this aspect will be found in Hirn's *Origins of Art*.

Technology. The study of what man makes and how he makes it, is one that has appealed to many workers. Our museums are full of weapons and utensils, but in numbers of instances our knowledge about them is very imperfect. The localities from which objects are supposed to come are frequently vague and occasionally incorrect; the exact materials of which they are made, and the method in which they are made are rarely recorded. There are extremely few sets of photographs that illustrate all the stages in the making of an object; this latter is an important point, as the manufacture of primitive implements is fast disappearing. For such purposes the cinematograph might very well be employed by the ethnologist in addition to ordinary photography.

Sociology. The progress of all cultural peoples has depended primarily upon social habits, and the tracing of this evolution is one of the most important tasks that the ethnologist has to accomplish. In taking a general survey of the literature of comparative sociology, one is at first sight inclined to think that a fairly adequate amount of information has been collected; but when one begins to analyze the material a very different impression is arrived at. The statements are found to be too general and to lack precision in detail. Among less advanced peoples the communities are usually rigidly organized, and definite duties are allocated to certain individuals according to their position in the community at large or according to their kinship. In order to gain a thorough knowledge of the construction of any society, it is essential that these several duties should be clearly recorded, and exact information should be given concerning the individuals by whom they are performed. It is precisely in such details that most accounts hopelessly break down. As the social structure of many peoples has been shattered by contact with Europeans it is of the greatest importance that an effort should be made to recover this class of information; in many cases it is probably already too late, but in others it is possible that something may yet be saved. As a matter of fact, a very large proportion of the earlier observations on the sociology of native races requires to be confirmed and amplified.

Philology, or Linguistics, deals not so much with languages as with language, its origin, nature, and laws, and in addition to the spoken language the ethnologist studies gesture- and sign-language, as well as pictographic, symbolic, ideographic, and phonetic writing.

An interesting field for research will be found in the evolution of literature, but even this cannot be culled from existing books, as verbatim transliterations of tales, songs, and sayings are very rare, and free renderings, and abbreviated accounts are of little value from this point of view.

Sophiology is a word invented by Major Powell to comprise the study of "inferences, conclusions, abstractions, beliefs, and all other forms of knowledge or pseudo-knowledge:" he defined it as "A science of opinions, including the activities of promulgation and acceptance." Although it is true we have a mass of material dealing with these subjects, no one can admit that it is sufficient.

Innumerable magical practices have been recorded, but even so, more information is required as to the method in which they are supposed to act. Dr. J. G. Frazer¹ regards religion as opposed in principle to magic, and holds that an age of religion has everywhere been preceded by an age of magic. Others, as Marett puts it,² consider that "Magic proper is all along an occult process, and as such part and parcel of the 'God-stuff' out of which religion fashions itself."

The problems of sophiology are fundamentally questions of psychology, and they require to be studied by those who have had a thorough training in that science.

The appliances and ceremonies of religion are of the highest interest, and should be described with great minuteness, and the associated myths, which are probably always later than the observances for which they are supposed to account, deserve to be written down. Of late years certain ceremonies have been described with an admirable wealth of detail and illustration by American ethnologists such as G. A. Dorsey, J. W. Fewkes, Washington Mathews, J. Mooney, and H. R. Voth; and Baldwin Spencer, F. J. Gillen, and W. Roth have done the same great service to science in Australia.

After all, ritual is but the outward form of the more important religious idea, and field-work undertaken by suitably trained observers is necessary before much advance can be made in tracing the evolution and early vagaries of this idea.

It is a matter for regret that, although a great deal is now being written on symbolism and religious art, comparatively little of it is the outcome of work in the field.

To whatever department of ethnology we turn our attention, wherever we glance over the map of the world, the fact is increasingly evident that we need more extensive and more detailed observations. The data upon which students at home have to rely are

¹ J. G. Frazer, *The Golden Bough: a Study in Magic and Religion* (2d ed. 1900), I, pp. 63, 75.

² R. R. Marett, "From Spell to Prayer," *Folk-Lore*, 1904, xv, p. 160.

usually of the most imperfect character; this, however, is not at all to be wondered at when we consider the training of those who collected the information or the manner in which it was obtained. The reliable collector is as fully aware as is the helpless student of the imperfection of his record, and for this there is only one remedy, — more extensive and more thorough investigations in the field carried on by trained observers.

Travelers and residents, naturalists as well as anthropologists, continually point out that throughout the world a very rapid change is taking place among nearly all peoples. The expansion of Europe has affected the less civilized peoples in very diverse ways, and this pressure has resulted in social upheaval, the upsetting of traditional safeguards to morality, and weakening of old faiths.

Owing to the withering influence of the white man, the more primitive peoples are more or less rapidly disappearing; either they are actually dying out, as are the Australians, who are quickly following the now extinct Tasmanians, or they are becoming so modified by contact with the white man and by crossings with alien peoples who have been deported by Europeans that immediate steps are necessary to record the anthropological data that remain. Not only are the opportunities for study fast slipping away, but this process is actually fastest in those countries where the most important results are likely to be obtained. There is no exaggeration in this. The delay of each year in the investigation of primitive peoples means that so much less information is possible to be obtained.

A word of warning is not unnecessary. There is still a great danger that travelers will make it their first endeavor to amass extensive collections, quite regardless of the fact that a sketch or a photograph of an object about which full particulars have been collected is of much greater scientific value than the possession of the object without the information. The rapid sweeping-up of specimens from a locality does great harm to ethnology. As a rule only the makers of an object can give full details respecting it, and no traveler who is here to-day and gone to-morrow can get all the requisite information; this takes time and patience. The rapid collector may get some sort of a story with his specimen, but he has no time to check the information by appeal to other natives, or to go over the details in order to see that he has secured them all and in the right order.

It is now recognized that many native objects have a deeper significance than would be suspected by the casual observer. This can only be coaxed out of the native by patient sympathy. Some information may be "rushed," but the finer flowers of the imagination, the spiritual concepts and sacred aspirations, can only be revealed to those with whom the native is in true sympathy, and,

quite apart from idiosyncrasy, the time-element is a most important factor. No, the rapid collector does positive harm, as, like the unskilled excavator, he destroys the collateral evidence. He may add a unit to a collection, but its instructive value is reduced to a minimum: it is the gravestone of a lost opportunity.

A thorough scientific training is essential for satisfactory field-ethnology. It is quite a mistake to assume that practically any one can successfully undertake this class of research, for it is mainly owing to a lack of training that such a great deal of the work of the earlier observers requires to be done over again. There are numerous instances of men trained in various branches of science who have proved to be successful ethnologists, but preliminary instruction in ethnology would have saved them much time and would have considerably improved their results. We need travelers who can observe accurately and record intelligently, who have trained minds and can understand the value of evidence, who have sufficient previous knowledge to know what to look for, and who are instructed not only in all the methods of ethnological research, but who have been warned of the pitfalls that endanger the unwary. As the investigator usually has to study all the aspects of the life of the people he visits, so is it necessary for him to have a wide knowledge of arts, crafts, and sciences, otherwise he will be unable to grasp the full significance of what he sees and hears. As a matter of fact, there is practically no branch of knowledge which may not prove useful to the field-ethnologist.

So far I have spoken merely of his intellectual equipment, but there are other qualifications which should not be passed over.¹ The field-ethnologist should be an artist, or at least have the artistic temperament. Only thus will he be able to appreciate what it is in the art expression of the people he is studying that gives them

¹ "There are also two personal traits which, it seems to me, are requisite to the comprehension of ethnic psychology, and therefore are desirable to both the ethnologist and the historian, the one of these is the poetic instinct.

"I fear this does not sound well from the scientific rostrum, for the prevailing notion among scientists is that the poet is a fabulist, and is therefore as far off as possible from the platform they occupy. No one, however, can really understand a people who remains outside the pale of the world of imagination in which it finds its deepest joys; and nowhere is this depicted so clearly as in its songs and by its bards. The ethnologist who has no taste for poetry may gather much that is good, but will miss the best; the historian who neglects the poetic literature of a nation turns away his eyes from the vista which would give him the farthest insight into national character.

"The other trait is more difficult to define. To apprehend what is noblest in a nation one must one's self be noble. Knowledge of facts and an unbiased judgment need to be accompanied by a certain development of personal character which enables one to be in sympathy with the finest tissue of human nature, from the fiber of which are formed heroes and martyrs, patriots and saints, enthusiasts and devotees. To appreciate these something of the same stuff must be in the mental constitution of the observer."

D. G. Brinton, *An Ethnologist's View of History*, an address before the Annual Meeting of the New Jersey Historical Society at Trenton, N. J., Jan. 28, 1896.

pleasure and satisfaction. He should be able to recognize the artistic impulse which from our point of view is a germ rather than a realization, and thus discern what the people are striving after despite uncouth and imperfect presentation.

Finally, he should have sympathy. A great deal has been done by energy and intelligence, but the finest ethnological work can be accomplished only by that subtle quality that eludes definition. All sorts and conditions of men will open out and reveal their secrets and unveil their mysteries if approached in a spirit of *camaraderie*, but it is permitted only to the sympathetic to enter into the innermost shrine where are laid bare the hopes and fears, the ideals and aspirations, of another's soul. The rude and the rough, the cynic and the skeptic, cannot enter here.

My plea, then, is for investigators, not for mere collectors; as many of the former as possible and as few of the latter. There is not much difficulty in finding men willing and competent to undertake such investigations if funds were forthcoming. One point is worth mentioning for their further encouragement: in most branches of scientific inquiry, later investigations, owing to more minute study, improved methods, or a new point of view, are apt entirely to eclipse the earlier discoveries. Now this is not the case with ethnological research in the field. The earlier the observations are, provided they are full and accurate, the more liable they are to be of greater importance than the later ones. Students continually refer to the oldest books of travel, and they will always do so. From this point of view it is evident that properly qualified investigators should set to work without delay. Every year's delay means that the work will be so much the less perfect. All who are concerned in any field of work can have the satisfaction of feeling that students of mankind in future ages will have to consult their publications, and they have the tremendous responsibility that what they write will have to be accepted as correct, as there will be no means in the future of checking it.

The work that requires to be done is of so extensive a nature that no one institution, not even one country, can hope to do more than efficiently cover a small portion of the field. It appears to me that this is one of those departments of science that require coördination. Individual action can accomplish a good deal in restricted areas, but would not systematic coöperation be more efficacious in most cases? There are certain districts that need more immediate attention than others, and an international body should be in a better position to direct field-research towards the most profitable districts and to facilitate the work of the investigators than a private individual.

More than once ¹ have I pointed out that it is well from time to time to take stock of our knowledge and of our methods of inquiry, to see whether we are working on sound lines. As the business man finds it necessary to go over his stock periodically and to balance his books, so also the scientific man, especially the biologist, should perform an analogous operation, lest perchance he finds out too late that he has been entering on a comparatively unprofitable piece of work, or has been neglecting valuable opportunities.

We can, perhaps, gain a clearer view of the question by looking at it from the standpoint of our successors. What opinion will the sociologist and the historian of a hundred, or of a thousand, years hence have of the work now being done? What is the research they would wish us to have undertaken? The question is not a difficult one to answer. They will certainly and most justly complain if we busy ourselves entirely with problems that can wait, which they can solve as well as we, while at the same time we neglect that work which we alone can do.

Our obvious and immediate duty is to save for science those data that are vanishing. This should be the watchword of the present day. It is difficult to suggest an object more worthy of liberal support than this. In sober earnestness, therefore, I appeal to all those who are interested in the history and character of man, whether they be theologians, psychologists, historians, sociologists, or anthropologists, to face the fact that a later generation may employ itself in working-up the results garnered by ourselves or in studying other subjects, but to this generation, and to this alone, is appointed the task to which I have now drawn your attention.

¹ *Nature*, January 28, 1897, p. 305; *Popular Science Monthly*, January, 1903, p. 222.

APPENDIX ¹

Two years ago I published the following scheme, for which I was largely indebted to my friend Professor Patrick Geddes, that had for its object a presentation of the mutual relations of the various branches of study with which anthropology is concerned.

ANTHROPOLOGY.	ETHNOLOGY (SOCIOLOGY).	Archeology.	Social Taxonomy.	Economics and Politics.	Philosophy of History.
		Evolution of Institutions and Technology.	Analysis of Institutions and Technology.	Functioning of Occupations and of Institutions. Linguistics.	Criticism of Institutions.
	ANTHROPOGRAPHY.	Paleontology of Man.	Racial Classification of Man.	Anthropographical Ecology.	Rational Phylogeny.
		Comparative Human Embryology.	Comparative Human Anatomy.	Comparative Human Physiology.	Rational Ontogeny.
	BIOLOGY.	Paleontology.	Taxonomy.	Ecology.	Rational Phylogeny.
		Embryology.	Anatomy.	Physiology.	Rational Ontogeny.

The science of man is concerned with a portion of the same series of studies as are zoölogy and botany, but, unlike them, it must be considered as it were in several planes. The lowermost plane is generally known in this country under the term physical anthropology, the "anthropology" of many writers; for which we also have the useful term of anthropography. A plane above this may be conveniently termed ethnology. A higher plane is that known as psychology. Beyond this we need not go at present.

Anthropology, like zoölogy and botany, may be studied under the aspects of anatomy, taxonomy, embryology, paleontology, physiology, ecology, and etiology.

Anthropography

The anatomy of man is dealt with by the human anatomist, and it is only when the anatomy and histology of the different races of men are treated comparatively that they may be said to be anthropological. That is, (1) the purely descriptive study of man's anatomy is human anatomy, preliminary alike to

¹ Extracted from President's Address [with slight alterations], *Journal, Anthropological Institute*, 1903, xxxiii, p. 11.

comparative research and to practical application in medicine and surgery; (2) the comparative anatomy of man with other animals is comparative anatomy; (3) the comparative anatomy of man with man is anthropography.

The analysis and classification of the various races of man is strictly a branch of systematic, or taxonomic, zoölogy; but if this subject had been left to the zoölogists, very little would have been known at the present day about the races and peoples of mankind, and we are thoroughly justified in taking it over. The geographical distribution of the human varieties comes in here, and would have been similarly neglected if it had been left to the general geographer.

The embryology of man is clearly on the outskirts of anthropography; comparative human embryology can scarcely be said to exist, but when it does it will fall more directly within our province.

The paleontology of man has always been accepted as within the scope of anthropography, although it is equally a branch of vertebrate paleontology.

Human physiology is primarily a part of comparative physiology; it is only when the functions of individuals of various races are compared *inter se* that they become anthropographical.

The ecology of the nature-folk passes by such insensible grades into that of the culture-folk that it is difficult in practice to draw the line between them. The interrelations between the physical and biological environment on the one hand and the mere gatherers of food, the hunters, and even the simplest agriculturists on the other, are very similar to those of mere animals, and so far one may speak of an anthropographical ecology.

Finally, etiology in anthropography, as in zoölogy and botany, seeks to rationalize the evolution of the individual and of the race. While the embryologist and paleontologist study and describe the facts of ontogeny and phylogeny, the etiologist seeks to reach a rational explanation of each of these processes.

Ethnology

On turning to a higher plane we leave the natural man (*ἄνθρωπος* or *homo*), and pass to the social man (*socius*), and in ethnology, or sociology, as it may be termed with equal propriety ("the natural history of social life," as Dr. A. H. Post terms it), we can retain a series of studies analogous to those in anthropography and zoölogy and botany. A description of a single group of man (*ἔθνος*), is sometimes described as ethnography, and in this sense it should be a monographic study including alike anthropography, ethnology, and psychology.

The anatomy, so to speak, of the social man (*socius*) is descriptive sociology, or the analysis of his institutions, and technology, which is the description and comparison of the tools he employs.

Social taxonomy deals with the clan, family, tribe, nation, and similar groups. The geographical distribution of these must not be lost sight of, and, as in zoölogy or botany, is conveniently treated by the taxonomist.

The origins and developmental phases of the occupations, institutions, and technology of cultural man are the analogue of the embryology of the natural man, and must be taken together with archeology, which is the paleontology of history.

The actual functioning of the occupations and institutions of cultural man bears the same relation to their analysis that physiology does to anatomy, but the relation is more intimate, as the one can scarcely be considered apart from the other. As the objects made by man belong to the analytical category, so here may be taken all methods of conveying ideas or information, from gesture-language to linguistics.

The interrelations between various social groups, between male and female,

clan and clan, tribe and tribe, nation and nation, is that form of ecology which is more generally known under the name of economics and politics.

Finally we have the attempt at an evolutionary interpretation of all human history, or ethnological etiology.

Psychology

A third plane of the study of man is one in which the limitations of the classification in the animal plane are largely transcended. Anthropography deals with man solely as an animal; ethnology, or sociology, studies all the enterprises of social man. Psychology takes us into the inner sanctuary of man, and while it, too, has its roots in his animal nature, it flowers, so to speak, in a realm of its own.

The physiology of the senses passes through psychophysics into psychology proper. Sensations and mental operations can be analyzed and classified; their genesis can be studied partly by observation, partly by inference.

Objects made by man may be studied concretely; the uses to which they are put in the individual or social life can be described; but there is also a psychology of invention, a psychology of social function, a psychology of language.

The psychology of the individual, and the comparative psychology of groups, are both subjects for study. Thus we arrive at the psychology of economics and politics: but have we not already passed beyond the legitimate bounds of our science?

SHORT PAPERS

MR. STANSBURY HAGAR presented a paper before this Section on "The Astronomical Ritual of Peru," in which was set forth the festivals of Peru as found by the Spaniards at the time of their invasion, and the authoritative explanations which have since been made in reference to their origin. Particular attention was given by the speaker to the astronomical myths. The astronomical myths and ritual naturally followed the calendar changes, and the festivals, at first connected with the asterism crossing the meridian at midnight, were transferred to the opposite asterism through which the sun was passing at the time of the celebration, but one trace of the purely stellar system remained in the beginning of the rites after sundown.

PROFESSOR A. M. TOZZER, of Peabody Museum, Cambridge, Massachusetts, presented a short paper on "A Few Survivals of Ancient Maya Rites in Yucatan and Chiapas."

BOOKS FOR GENERAL REFERENCE FOR DEPARTMENT OF ANTHROPOLOGY

(A brief list prepared by the courtesy of Professor Frederic W. Putnam, Harvard University and University of California)

- ABBOTT, Primitive Industry.
AVEBURY (LUBBOCK), Prehistoric Times (latest edition).
BROCA, Instructions Anthropologiques générales.
BRINTON, American Race; Maya Primer; Religions of Primitive People.
DAWKINS, Cave Hunting; Early Man in Britain and his place in the Tertiary Period.
DENIKER, Races of Men.
EVANS, Ancient Stone Implements of Great Britain; Ancient Bronze Implements of Great Britain.
FARRAND, Basis of American History (vol. II, The American Nation).
FRAZER, The Golden Bough; Totemism.
GROSSE, Beginnings of Art.
HADDON, Evolution in Art.
HALE, The Iroquois Book of Rites.
JESPERSEN, Progress in Language.
JOLY, Man before Metals.
KEAN, Ethnology.
KINGSLEY, West African Studies.
LANG, Myth, Ritual and Religion.
LETORNEAU, Property, its Origin and Development.
LUBBOCK (AVEBURY), Primitive Law.
MORTILLET, Les Préhistorique.
MUNRO, Lake Dwellings of Europe.
NADAILLAC, Prehistoric America.
POWELL, Introduction to the Study of American Languages.
RATZEL, History of Mankind.
RIPLEY, Races of Europe.
SCHULTZE, Fetichism.
SHORT, North Americans of Antiquity (2d edition).
SPENCER and GILLAN, Native Tribes of Central Australia; The Northern Tribes of Central Australia.
STARCKE, The Primitive Family: Its Origin and Development.
STEPHENS, Incidents of Travel in Yucatan; Incidents of Travel in Central America, Chiapas, and Yucatan.
SWEET, History of Language.
TOPINARD, Eléments d'Anthropologie générale.
TYLOR, Primitive Culture (latest edition).
WESTERMARCK, History of Human Marriage.
WHITNEY, Language and Study of Language; Life and Growth of Language.

Anthropological Journals and Publications of Societies and Museums.

Academy of Natural Sciences (C. B. Moore's Memoirs on the Archæology of the Gulf States).

American Anthropologist.

American Antiquarian.

American Antiquarian Society, Proceedings of.

American Folk-Lore Society, Journal and Memoirs of.

Archæological Institute of America, Journal of.

Essex Institute, Bulletins of.

Ohio Archæological and Historical Quarterly.

Smithsonian Institution, Annual Reports and Contributions to Knowledge.

U. S. Bureau of American Ethnology, Annual Reports and Bulletins.

U. S. National Museum, Annual Reports.

U. S. Ethnological Survey of the Philippines.

American Museum of Natural History, New York, Memoirs, Bulletins and Journals.

University of California Publications: Anthropological Department.

Field Columbian Museum, Publications of Anthropological Department.

Free Museum of Science and Art, University of Pennsylvania, Bulletins and Transactions.

New York State Museum, Albany, Bulletins (Archæological Series).

Peabody Museum of Harvard University, Memoirs, Papers and Special Publications.

Anthropological Institute of Great Britain and Ireland, Journal of.

Anthropological Institute of Great Britain and Ireland, "Man."

Archiv für Anthropologie.

Globus.

L'Anthropologie.

London Folk-Lore Society, Journal of.

Internationales Archiv für Ethnographie.

Petermanns Mitteilungen.

Zeitschrift für Ethnologie.

Museums and Societies of Berlin, Bombay, Buenos Ayres, Brussels, Dresden, Florence, Leiden, Leipsic, Lyons, Madrid, Mexico, Moscow, Munich, Paris, Riga, St. Petersburg, Stockholm, Trondhjem, Upsala, Vienna, Wellington (N. Z.), etc., Publications of.

DIVISION D — MENTAL SCIENCE

DIVISION D — MENTAL SCIENCE

(Hall 7, September 20, 10 a. m.)

SPEAKER: PRESIDENT G. STANLEY HALL, Clark University, Worcester, Mass.

THE UNITY OF MENTAL SCIENCE

BY GRANVILLE STANLEY HALL

[**Granville Stanley Hall**, President of Clark University, and Professor of Psychology and Education, since 1889. b. February 1, 1846, Ashfield, Mass. A.B. Williams College, 1867; B.D. Union Theological Seminary; Ph.D. Harvard College; LL.D. Williams College, Michigan, and Johns Hopkins University. Instructor and Lecturer, Harvard University, 1874-76; Professor of Psychology and Education, Johns Hopkins University, 1880-89.]

WE have great reason to congratulate ourselves on the progress of psychology, not only in this country, but in the world, during the last quarter of a century. Not only have students, teachers, textbooks, journals, societies, laboratories, and monographs increased, and new fields have opened and old ones widened, but our department has been enriched by original contributions that have profoundly modified our views of mind and even of life itself. For the first time in this field American investigators have borne an important and recognized part in advancing man's knowledge of the soul. Among these we take pride even in the presence of our distinguished foreign guests in naming first of all James, who, more than any other American, has occupied and influenced the psychological thought of both experts and students here for a decade, and whose charming personality and style have done most to infect cultivated laymen in all adjacent fields with interest in psychology and to make American thought known and respected abroad; Ladd, to whom we owe the first text on physiological psychology in English, and who, more than any other American, illustrates the old tradition of a system of philosophic thought large enough to embrace most of the topics, from the laboratory to religion; Münsterberg, who has not only done more than any of his distinguished Teutonic predecessors, from Agassiz and Lieber down, to make Germany and America know and respect each other, but has been the first to lay the foundations of a new efferent system of thought which harmonized the best in Fichte and Schopenhauer with the choicest results of the laboratory; Titchener, with his thorough English training, whose ceaseless productivity makes him already in the widening fields he cultivates our Amer-

ican Wundt, in a thoroughly and sometimes radically reconstructed and improved edition; Baldwin, the first here to attempt a logic of biology and sociology and evolution that should apply to genetic psychology; Dewey, who, much as he achieved in logic and general psychology, has done perhaps yet more to make these topics fruitful for education; Cattell, pioneer in founding two laboratories, the foremost editor in our ranks, who has boldly grappled the vast problem of individual psychology in a way which, if solved, must make even biography more scientific; in other related fields Royce, Ormond, Howison, Fullerton, Strong, who have done so much to restore the faltering belief in soul, freedom, God, and ultimate reality; Cowles, Donaldson, Myer, Hoch, Herrick, each marking advances either in exploring the obscure psychoses of mental aberration, advancing our knowledge of the brain, correlating psychic symptoms and neural and somatic changes, and making the asylum tributary to science, — these inadequate references, not to mention my own associates, or even the score or two of younger men whose work already gives promise of a future richer in results than the past, and omitting, solely because I am too ignorant to speak of it, the department of sociology, bracketed with ours to-day, but which has also made advances perhaps hardly less signal, — these suggest my theme, which is simply a plea for yet more differentiation and specialization between men, departments, and institutions, and certain modifications of method in our rapidly widening field.

The idealist who holds that the world is man's concept and that all science is a part of psychology can hardly object to the far more modest claim that it really does properly include logic, ethics, religion, esthetics, epistemology, and metaphysics; and those who, with Lotze, still cling to that dear old tradition of the theoretic life that its supreme joy is to attain the fullest expression of one's own personality in a comprehensive philosophical system, must not carp if one who long since abandoned the youthful hope of attaining this felicity vents his own individuality a little, as, with your kind indulgence, I beg leave to do, excused somewhat by the conviction that all systems, the most meager and the best alike, are only human documents, empirical data, votes, résumés, returns, to be used at last as empirical data for some greater synthesis of the future. If psychology is already far more than a sub-department of physiology, anthropology, and psychiatry, or a sub-section in a philosophical system as of old, if we may justly reject for it the place assigned it in the hierarchy of Comte and Spencer as a link between biology and sociology, and now base it no less upon the latter than upon the former, and not only claim for it an independence already achieved, but look forward to its ultimate hegemony in all the fields involving man's higher nature, or as being in a word

the culmination of humanism, it follows that we must regard all that all of us have so far done as only a prelude, that much of our work must be done over again, that the history of philosophy, instead of being philosophy itself, is to be subordinated as psychological material for a truer and far more comprehensive natural history of mind, and that the best of us are only morning stars which will pale and be forgotten as day advances. .

If the germs of soul are as old as life itself, and if its types are as distinct and as persistent as those of morphology, then, though we can no more define it than we can life, must we not draw the momentous inference that consciousness alone is a very partial and inadequate organ of experience, and at best only one culminating stage, like a submarine plant's leaves and blossoms that alone reach the surface? Does not experience by its very nature tend to lapse below the threshold of consciousness, and just in proportion as it becomes complete does it not sink beyond the reach of subjective analysis? Nay, more; does it not so strongly tend to become automatic that to become perfect it must lose even the power to be transmitted by instruction, but only by heredity? If so, must we not supplement the methods of internal by those of external observation, subjective by objective, and deductive by empirical researches? Just as history is now studied more as the daily life of the average man and as the play of but half-understood economic racial and telluric forces, and less as the mere records of battles and the acts of kings and courts, so must not psychology more and more centre in the study of love, pity, fear, anger, pride, conscience, beauty, love of power and wealth, sympathy, and all those social instincts that make our life their sport? Should we not find helpful biological suggestion in the example of Bateson and his growing circle of followers, who would go back to facts baldly recorded to lay broader foundations for their pyramid, instead of steepening its angles to a tower, or inverting it, and be content in some fields with a merely descriptive psychology that masses facts, not ignoring those that now seem most trivial, registering reflexes that, perhaps, appear but once in a lifetime, vascular and other somatic resonances that seem meaningless, in the hope that ultimately we may be able to infer something about the psychic states that once animated them and do something to restore the great volume and variety of lost soul and life that mechanism, missing links, and extinct species, animal and human, have taken out of the world?

For myself, if I were challenged by some advocate of a psychology without a soul to improvise a working hypothesis of what soul may be like, I might boldly begin by assuming it to have been more potent in the past than it is in the present, but ever tending to vanish, as heat, which once made the earth incandescent, does to dissipate

itself; as something with which the deathless germ-plasm is more instinct than are the somatic organs it evolves, even the brain where it has now taken refuge; as something no less closely related than theology once made the persons of the Trinity to be among themselves, with the *nisus formitivus*, whatever that is, which, when the world was young and lusty, evolved all the products of natural selection, developed and then differentiated hunger and love, adapted flowers and insects to each other, made instinct and inspired all its purposive acts without the aid of any sense of purpose, was shaped by all the forces that have modified life since it began; that domesticated useful and tried to exterminate noxious animals and plants, invented thousands of languages, the syntax of some of the lowest of which are the new marvels of philologists; that laid down the lines of the primeval religions and struck out all the unwritten laws and customs of social animals and tribal men, the latter more complex and perfect in many respects, as a recent English Blue Book on Africa insists, than any that civilized legislators have yet devised. On this view soul-life, when it was chiefly passion, feeling, impulse, may have been far more dominant over the body and all its processes than now. It was hot, intense, lived out close to the elements, always in sight of the edge of the fierce struggle for survival. It was more life than thought, more collective and racial than individual, shaped the world from within rather than, as science is now learning to do, perhaps, in a derived and secondary way, from without. Everything was genetic, nothing logical, while as yet no symptom of the great paralyzer, self-consciousness, had appeared. This was the great reality which our late developed and senescent, ingrowing intellect has lost and yearns for as old age yearns for its vanished youth. Its traces, fossils, remnants, still abound in our own body and soul and in life about us, but unless we can read our titles clear to this pleroma of life abounding, the psychologist will still have reason to grieve as an exile from his pristine paradise vainly seeking atonement with God, the world, and self. Some type of soul-life has passed out of the world with every species that became extinct, every vanished tribe, with every child that develops into maturity, with every substitution of self-consciousness and reflection for the naïve, intuitive, spontaneous, and what we call the progress of knowledge is a compound of mingled gains which we keenly feel with losses that we far less keenly realize.

When the intellect, which seems to have been developed late, as a new function of adaptation to the external world, leaves the latter and seeks to introspect its own processes and reflect upon them, it crosses some important *pons*. This involution is hard, slow, and with many stages. Perhaps first are the half-instinctive musings on some memory-content of conduct as affecting pleasure and pain, or upon

motor impulses, or the somatic stages that accompany thought are more vividly sensed. Many laboratory experiments directed to other ends have as their best result the revelation of the intricacy of the simplest psychic operations. We find a mazy network of tentative associations and impulses struggling for survival or for emergence into the narrow focus of attention, chaotic irruptions into saner sequences of perception or thought, manifold shades or elements which language is far too clumsy and conventionalized adequately to express, distractions which must be ignored by an act of the will as we ignore all that is in the indirect field of vision. From all this we select out the few and meager factors we want. But if, instead of doing so, we yield to the diverticula and seek to note all that takes place within, we soon feel that we are sane only by a small working majority of our activities, and that underneath the cosmos of habitual sequences and reasoned thought lies a vast and rank chaos of unorganized elements that defy order, analysis, or even description. Some are new and some, perhaps, older than history, or even than man; some strong and compelling and some so pallid and imperceptible that many experimenters hardly suspect their existence, some congruent and some diametrically opposed to each other. But the tropical sea and jungle are not more rank with life. From all this we realize in a new and deeper sense that conscious mind is only a rather superficial product of gradual and half-unconscious selection, from all this vast seething psychic activity within, of those factors that are practical or most needed for the present conduct of life. Old systems and adjustments to earlier conditions are ever disintegrating and left to lapse and ruin, although they long reverberate in the subliminal field, echo in feeling tones, or on occasion have sudden resurgence in automatisms, outbreaks of passion, or insistent ideas and impressions, or are injected like dikes into otherwise coherent conduct or thought. The power of survival of these rudimentary organs and processes of the past life of the soul is prodigious. Perhaps they never quite vanish even asymptotically. If the purest science is the completest description of origins and stages of development, psychology may, perhaps, never be complete.

Leaving these, must we not hence infer that the conscious soul we know was evolved solely as an organ to regulate practical life; that there is no criterion of truth, save its value as a guide to conduct; that the sciences of nature and of mind are, can be, and mean only a system of rules for right living and thinking; that to ask what the world and soul are *per se* is an extravasation of the intellect which was kindled only to shed light upon the supreme problem of how to feel and act aright and to which it is subordinate as means to end; that to ask what mind and nature are *per se* and apart from all use by heart and will is paranoiac, or a new scholastic entity cult, because

the end of science, as well as the only real essence of mind, is service? Thus the quest of absolute reality must always end in the solipsistic involucre, which is only a new definition of zero, and pure thought purged of will, feeling, and sense cannot be an object of psychological study, for it does not exist.

Mathematics, which is a formulation of the properties of time and space in the sensory, applies at most only to motion and force in time and space, and its objects are at the bottom, where those of psychology are at the top of the scale of evolution and complexity. From Pythagoras down to Herbart, Fechner, the hedonistic calculus in ethics which the vilest wretch may master without feeling the faintest impulsion to virtue, the Boolean and even common deductive logic which never yet discovered anything, and, indeed, I think, every attempted application of mathematics to psychology, save only for the simple algebraic or other treatment of statistical data, have later proved an illusion, if not a mere affectation; and we owe to-day no more to any concept susceptible of mathematical formulation than modern physiology does to the old iatric school that so elaborately treated the bones as levers, the muscles as pulleys, circulation as hydrodynamics, digestion as trituration, and insisted, as Plato did for philosophy, that geometry was the best preparation for the study of medicine. Perhaps no two types of mind have less in common than the mathematical and the psychological, or help each other less and may hurt each other more. The former has given us hosts of defunct definitions, categories, and dogmas, and has constructed world-bestriding systems by concatenations of the high *a priori* kind in a way that must raise the query in every candid and impartial mind whether in the field of mind the precept "truth for truth's sake" is not as dangerous as the dictum "art for art's sake" has proven in its, and whether, beside the old injunction "physics, beware of metaphysics," we should not erect the warning "psychology, beware of mathematics," and make due purgation of both its methods and its ideals.

Thus, the first and, perhaps, the chief danger to psychology as a science to-day seems to me to be its tendency, as by an iron law, to gravitate to methods that are too abstract, deductive, speculative, and effectively exact. Other sciences long since threw off the influence of the old systems, many of which had dominated them, but psychology is still permeated by them. It still feels the charm of the old insolubilities of ultimate reality, of the relation of mind and body, parallelism or interaction, the primacy of feeling or somatic changes, and is dominated more than it knows by interests in the soul's future, by teleology, freedom *versus* necessity, all of which, so far as we see, can never be problems of scientific

psychology because they cannot be answered. The modern psychologist, too, can be neither materialist, idealist, positivist, dogmatist, gnostic or agnostic, or, rather, is at the same time all of these in some way or degree. Such problems have a large and very important place in the history of philosophic thought. Their culture value as disciplines is very great, but they belong to a stage of mentation now passing away and doomed perhaps ultimately to become as *überwundene Standpunkte*, as those of vortexes, the plenum or vacuum, the Plutonic *versus* the Neptunic theories, have become for science. The ethical bearings of many of these questions once thought so great are rapidly becoming insignificant, but they still bulk large wherever psychologists are dominated by theological interests, or even accept, as far more do, their problems at the hands of metaphysics. Our science is still, like Milton's tawny lion, pawing to get free from the soil in which it is just being born. Many text-books and treatises modulate from the latest science to the oldest speculative surds and speak in two alternating registers, while others evaluate new results by their bearings upon antique problems wrongly put in a pre-scientific age, but made venerable and most significant for history by the accretions of the best and most ingenious thought of ages. Thus, the second danger that besets our work is that it is not sufficiently emancipated from the now conventionalized criteria of past systems of thought, and has not subordinated these as it should to be used not as finalities or solutions, but only as empirical data for larger generalizations that transcend them. But if it is the philosophy of philosophy, it comes to many of these problems not to destroy, but fulfill.

The third source of danger to psychology arises from the theory of knowledge or epistemology. The human soul inherits the result of a vast experience acquired by the race, but innate in the individual, but the latter cannot validate much of it in his own restricted life. He is so surcharged with paleo-atavistic traces, tendencies, instincts, from back, perhaps, to the amphioxus or even the amœba, that he often seems to himself to live and move in a world that is both within and without unrealized alien, and afar. What we inherit is so much better organized than what we acquire, it is so dominant and, perhaps, so unmodifiable and unaccountable, that the world and self seem shadowy, and our unreflecting confidence in these is thus easily shocked out of its poise by Berkeley and Hume till some come to feel that a life so unexplained is hardly worth living. When, in addition to these predisposing causes which for some diatheses may become a neurosis, the thinker leads a pallid, anemic life in academic isolation from the great, throbbing, struggling world, and in the study devotes

himself to passionless contemplation pampered by the second-hand knowledge of life derived from books, it is not strange in a precocious and over-civilized age, with more knowledge forced upon the mind than it can digest, that the veil of Maya sometimes settles fold on fold over the soul till it almost feels the panic of the claustrophobic and must break out and away to find reality or smother. It feels that, like the Holy Grail, removed from the sight of carnal men, it can be sought only by those purged from all defilement of the world of sense, but it must be found and quaffed or the soul be lost to truth. For those paranoiac minds sitting thus in prison, whose constitutional malady is aggravated by the doctrine of the ideality of space, the greatest philosophic delusion of modern times, it is well to have highways of escape opened up out of agnosticism. For many, if not most, too, a touch of it, but not too much of it is, perhaps, a necessary part of the complex initiation of youth into its world; but the severer types of this discipline seem more suited to senescent than to adolescent men and races. For the psychologist, however, in pursuit of his legitimate vocation, to be liable to be held up at any time to prove that the soul has a brain or a body, that the self or the objects of sense exist, that other people and animals with similar organs to his own have similar subjective states, is just as irrelevant and as paralyzing as it would be for the physicist, chemist, and astronomer, and any old answer makes just as little real practical difference of any conceivable kind in the one field as in the other. Yet the need of such a cult and all its symptoms, how they came to arise and how very real they sometimes are, and their forms of documentation in both the Oriental and the modern world, constitute not only a very important, but a fascinating problem for inductive psychology, while the ways of meeting these needs are legitimate and now even pressing questions of the higher individual pedagogy.

Finally, as to the field and methods of scientific psychology, the present speaker feels profoundly limitations that prevent him from rising to the height of the great argument for unification so wisely proposed in the plan of this Congress, and can only briefly indicate a view perhaps yet more personal than what has preceded, recognizing that very different ones are held by many if not most of his wiser colleagues. First, no trace of sentiency, even the faintest, down to and perhaps even into the plant world, should be alien to our interest. If in doubt between Wasmann and Forel, on one hand, and the mechanical interpretations of the tropisms and taxies as held by Loeb, Bethe, and Uexkull, we should recall and profit by the fate of Descartes' conception that even the higher animals were only automata. In experimenting on these, under the controlled conditions of the laboratory, we should not neglect

the observations of the field naturalists, nor ignore even the more valuable of the contributions of our agricultural stations, economic zoölogy, the stock farm, and the menagerie, men hunters, etc. Studies here need sympathy as well as controlled conditions. We also want compends of what is known of each of the important animals and birds nearest to man, and to make contact with dynamic or functional biology in its efforts to pass beyond morphology and investigate life, histories, habits, and causes of variation, postulating that the manifestations of instinct are just as differentiated and as persistent as those of morphology itself. No philosophic prejudice should make us forget that animals have the same will to live, love of offspring, fear, anger, jealousy, individual attachments, memory, attention, knowledge of locality, home-making instincts and senses that we do. Nor should we deny that empirical methods, whether they have yet done so or not, are quite capable of giving sufficient evidence for the existence of psychic powers as radically different from our own as those claimed for photodermatism or the topochemical sense of the antennæ of ants. Not only, then, might the old maxim, "*Psychologus nemo nisi physiologus*," be now also with much propriety reversed, but physiological psychology is now expanding both ways toward a larger biological philosophy, and studies of life and mind will henceforth be more and more inseparable just in proportion as genetic or evolutionary conceptions pervade our field.

Child-study, which began so crudely and has long since silenced many, though not yet all, of the objections raised against it, has already demonstrated its practical value for education, and is acquiring a place of its own in the literature of other departments, especially pathology, philology, and criminology, and is beginning to prove itself a key of unsuspected value in unlocking problems connected with the prehistoric development of the race, supplementing studies of the adult mind somewhat as embryology does anatomy and histology. It has not only made new connections between our work and the above departments, but is steadily developing a logic which, though as yet unwritten, is destined, in my own fond belief, to become an instrument of great value in reinterpreting the bionomic law of recapitulation, shedding new light upon early developmental stages, and thus giving psychology a genetic perspective which it has so sadly lacked in the past. Students in this field are impregnating insignificant and transient acts, expressions, and feeling with new meanings. This work still suffers from the fact that, like the Renaissance, the Reformation, and to some extent Darwinism itself, it had to begin outside academic circles, which are now so rapidly opening to it, and develop popular interest and momentum before it could attain scientific methods.

It has thus survived and profited by a volume of honest criticism which would have swamped a less vital movement, and that, too, by many of the very ablest of our craft who did not at first fully understand its scope and value. Now, although we might point with justifiable pride to its books, journals, chairs, its body of results that all accept, we believe that far greater results lie in the near future, and sometimes some of us indulge in dreams of a new dispensation of psychology doctrine with evolution more evolved as its centre.

Again, a new alliance is now cemented with the psychological side of anthropology and even ethnology. With almost no academic representation or support, it is our government that has developed a body of scholars that in the study of the Indian have, in the language of another, "set the world its best example of gathering and recording the myths, customs, rites, occupations, and modes of life, thought, and feeling of the decadent, yet the most representative of all the races of the stone age." Psychologists are learning to profit by this work and also to extend their interest to every such record of the sentiments, habits, social organizations, and superstitions of primal man. As a naturalist delights in new species, so we more and more both need and desire to profit by every new account that sheds light on how the remotest aborigine thinks, feels, and acts, and we do it with a psychic tension and exhilaration as if some great correlation with other allied fields impended. We feel a closer bond with sociology because it, too, is coming rapidly into rapport with anthropology and finding the key to so many of its problems in tribal and other consanguineous forms of early society. The reciprocal suggestiveness of this department with psychogenesis is already beginning to bear fruit.

So in mental and moral alienation we have a few precious and detached studies of psychic symptoms in individuals that are almost classic. The older epoch-making interpretations of epilepsy by Hughlings-Jackson, new views of hysteria, paranoia, a choice, fresh little literature on *dementia praecox*, a large collection of records of delusions, hallucinations, automatisms, and other phenomena of the border-land between sanity and insanity gathered at the behoof of an obsolescent hypothesis but interpreted in a way that has happily called attention to subliminal processes and also the methods of their exploitation by hypnotism;—many of these phenomena are devolutionary, others are normal states magnified by disease as if it were a microscope. Criminology, meanwhile, has shown us feral man in our midst, and given a copious anthology of facts about degeneration and perversion, many of which could now be used to make the teaching of practical ethics more inter-

esting and effective. It is high time that mental perversions should be represented by chairs in our medical schools, especially if they are to make headway against quacks and mind-curists, save the profession from some of the tragic experiences just recorded so vividly in the confessions of Veresaëff teach the medical student that there is something to be learned outside bacteriology and anatomy, and qualify him to dominate the mind as well as the body of his patient, particularly in a land and age when psychic and nervous complications are more and more involved in diseases. We should not forget the old adage of Hippocrates, "God-like is the doctor who is also a philosopher," which will also bear reversing, and if the psychologist does not study very much anatomy, save the brain and its general structure, the new conception of which he should know, he must give much attention to physiology, and have its latest results accessible. At least the psychiatric clinic where nature performs her tragic experiments should always supplement those of the laboratory.

All religions tend to decay, and must be incessantly revived and newly dispensed lest they become raucous and weakened in dogma, conventionalized in rites and rituals, and lose power over individuals, communities, and nations, and become divorced from science and life. The multiform symptom-groups of religious pathology are a sad but fascinating chapter only just beginning to be written. Sacrifice and totemism, the faith and prayer states of mind, asceticism, renunciation, miracles of healing, psychology of sects, Sabbath, saints, vows, and oaths, the conviction of sin, confession, ecstatic states, worship, the God idea in its many forms, the relations between religion and morals, — these and many more old problems, as they begin to be restated in psychological terms, beam with a new light, like the cherub faces in old canvases, awaiting reincarnation, which they must have if religion is ever to be again made interesting and influential for cultivated men. These themes demand a treatment quite apart from any problems of historicity, and should especially be represented in our theological schools, whose pupils ought to have some conception of what the soul they try to save is. Even the so-called philosophy of religion represented by Ritschl and his divergent pupils has not got beyond the restatement of judgments of worth as suggested by Kant's practical critique.

In fine, revolutionizing as the thesis may seem to many. I believe psychology should now be dominantly inductive and practical. Even the old systems, grand as they were, must, as I said, be treated as data of a higher order, whose makers thought they were doing one thing, but turned out to have done something very different. Instead of laying bare the constitution of the universe,

they were only documenting their own souls with unusual fullness for the benefit of the future generalizer. Their work, suggestive as it is, was precocious, and their conclusions premature, and about all of it must be done over again on a larger basis of facts, and our watchword must be not merely back to Kant or even Aristotle, but back to a reëxamination of the primitive events of soul-life, gathered by the most systematic outer and inner observation, and even from history, literature, experience, and wherever psychic life is most voluminous and intense; pain, misery, famine, war, revolutions, shame, revivals, every passional state in which Despine says all vice and crime originate; love, fervid as Dante knew it, crowds, the struggles of the individual soul with besetting sin, which is the original form of dualism as experienced from Paul and Augustine down to poor Weininger, who lately shot himself because he could not overcome the evil within which his almost Manichean system set over against his ideals of goodness. Especially as we advance from the study of sense and intellect to that of the will and feeling, the anemic thinker, who can realize in his own person so little of the stormy life of man, must seek every possible contact with it. He must live where he can among animals, children, defectives, the insane, criminals, paupers, saints, sinners, the sick, the well; must know grief and joy, — these, as well as the clinic and the laboratory, for here he fronts the bottom facts of the world. Next, he must supplement his at best meager first-hand experience with the proxy experience of others as recorded in books. Psychology lives not merely in the study, but where doubt and belief, sanity and inherited insanity, struggle together; where temptation and conscience wage their wars, in the mob, the cloister; where rage, terror, and pity become convulsive and sweep all before them, and where love of the lie usurps that of the truth. Once it was thought that the study of pure should precede that of applied science, but we are now coming almost to reverse this maxim in education. So psychology, especially in our practical age and land, must first study and teach how to live, love, learn, labor; must have something to say to all who reflect on reproduction, disease, health; and thus must first serve man well if it would later rule him wisely. If this view be correct, we must abandon many supposed certainties and finalities, and, with faith in a future far greater than the past has been, devote ourselves to severe and unrelenting toil, perhaps for generations; must often practice that hardest of all forms of self-restraint in our field, — the suspense of judgment, — assured that in the end psychology is to become queen of those sciences that deal with man, and reign among all the humanities somewhat as chemistry and physics are coming to do over the material world,

with a method, perhaps, sometimes no less exact and certain than these already have. So we shall at last attain a true metaphysics of realities behind sense and feeling which is the necessary crown of all science when it becomes complete.

DEPARTMENT XV — PSYCHOLOGY

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(Hall 7, September 20, 2 p. m.)

SPEAKERS: PROFESSOR J. MCK. CATTELL, Columbia University.
PROFESSOR J. MARK BALDWIN, Johns Hopkins University.

THE CONCEPTIONS AND METHODS OF PSYCHOLOGY

BY JAMES MCKEEN CATTELL

[James McKeen Cattell, Professor of Psychology, Columbia University, since 1891; and editor of *Science*; *The Popular Science Monthly*; *The Library*, and *Archives of Philosophy, Psychology, and Scientific Methods*; formerly editor of *The Psychological Review*. b. Easton, Pennsylvania, May 25, 1860. Graduate, Lafayette, 1880; A.M. 1883; Ph.D. Leipzig, 1886; Student, Göttingen, Leipzig, Geneva, Paris, 1880-82; Fellow, Johns Hopkins, 1882-83; Student and Assistant, Leipzig, 1883-86; Student and Lecturer, Cambridge, 1886-88. Professor of Psychology, University of Pennsylvania, 1888-91. Member of the National Academy of Sciences; the American Society of Naturalists (President, 1902); Fellow of the New York Academy of Sciences (President, 1902-03); Member of the American Psychological Association (President, 1895); Fellow of the American Association for the Advancement of Science (Vice-President, 1898); and member of various other scientific and learned societies.]

ONE of the verses in the treasure-house of Greek letters warns us against calling any man happy before he is dead. The greatest living English author lets one of his favorite characters say: "But does incessant battling keep the intellect clear?" Such reflections may well lead us to distrust any attempt by one in the ranks to sum up the fundamental conceptions and methods of a science, especially of a young and growing science. It may be the prerogative of the student of psychology to write the biography of an infant, but he has not hitherto penetrated very far into its real life. I disagree completely with the eminent psychologist to whom the plan of this great Congress is chiefly due when he claims that "the presuppositions with which a science starts decide for all time the possibilities of its outer extension." Sciences are not immutable species, but developing organisms. Their fundamental conceptions and methods at any period can only be approached by a research into work actually accomplished. Had time and circumstance permitted, I should have attempted to make an inductive study of the contents and methods of psychology rather than to prepare three quarters of an hour of generalities and platitudes. But, as even the pedant knows, "Die Kunst ist lang, und kurz ist unser Leben." The court poet must console himself for

the deficiencies of his ceremonial verses by reflecting on the honor of being permitted to write them.

The concept of a science is an abstraction from an abstraction. The concrete fact is the individual experience of each of us. Certain parts of this experience are forcibly and artificially separated from the rest and become my science of psychology, your science of psychology, his science of psychology. From all these individual sciences, shifting not only from person to person, but also from day to day, there arises by a kind of natural selection a quasi-objective science of psychology. In a well-bred science, such as chemistry, the conventions have become standardized; the dogmas impose themselves on the neophyte. But projectiles as small as ions or electrons break up the idols, and the map of science is remodeled more quickly and completely than the map of Asia.

Psychology has never had a well-defined territory. As states of consciousness appear to be less stable and definite than the objects of the material world, so the science of psychology is more shifting in its contents and more uncertain in its methods than any physical science. We are told, indeed, in our introductory textbooks that psychology is the science of mind, and that mind and matter are the most diverse things in the world. It is said, further, that psychology is a positive science, and is thus clearly distinguished from the normative disciplines, such as logic and ethics. Words are also used to set psychology off from sociology, history, philology, and the rest. But while all these verbal definitions may satisfy the college sophomore, they must be perplexing to the candidate for the doctor's degree.

The distinction between mind and matter is one of the last words of a philosophy which does not yet exist, rather than an axiom of every-day experience on which preliminary definitions may be based. We cannot rest satisfied with an empirical psychology in which the distinction is self-evident, an epistemology in which it is explained, and a metaphysics in which it disappears. It may be that we follow Descartes rather than Aristotle in our psychology, not so much from the needs of the science itself as from the demands of the church, on the one hand, and of physical science, on the other. The church required souls that might be saved or damned; physics wanted a world independent of individual perception, and as the methods of exact science were extended to the human body, it became a part of the physical system.

To us who have been brought up in the orthodox tradition, the views of some of those who have passed from natural science to metaphysics seem decidedly naïve. Thus Mach entitles the concluding section of his *Science of Mechanics*, "The Relations of Mechanics to Physiology," when he is discussing not the question as to

whether vital phenomena may be reduced to the laws of matter in motion, but the relations between sensations and the physical stimulus. Pearson tells us in his *Grammar of Science* that if the cortex of one brain were connected with another by a commissure of nerve substance, there would be "physical verification of other consciousness." Ostwald lets energy do hermaphroditic service in the physical and the extra-physical households.

But it is not certain that such ingenuous commingling of the mental and the physical worlds is more repugnant to common sense or natural science than the logical subtleties of the schools, which undertake to define, relate, or obliterate them. It is generally assumed that a psychologist must be either an interactionist or a parallelist. According to the definitions with which our psychologies start, it is indeed true that mind and matter must either interact or in some way correspond without interaction. If the psychologist asserts that each brain is a centre for the creation of new energy or for interference with the configuration of a material system, he obviously subverts the principal generalizations of physical science. He doubtless has a right to do so, but in the same sense as the cow has a right to stop the locomotive engine. If, on the other hand, the psychologist modestly admits that mind does not affect the physical order, he runs counter to the principal generalization of biological science. If pleasure and pain, memory and forethought, are of no use in the struggle for organic survival, why should they ever have evolved?

It requires less temerity to question the theories of biology than to deny the laws of physics. The survival of the fit may be regarded as a truism rather than as a discovery, if we call that fit which does survive. But fitness of this kind is so protean in its manifestations in organic nature that the formula becomes somewhat vague. If an animal is inconspicuously colored, it is protective coloration, and so useful; if conspicuously colored, it is directive coloration, and so useful. It is somewhat difficult to guess the utility of the fantastic shape and color of each deep-sea fish that lives in perpetual darkness. Then there are admittedly correlated variations, by-products of evolution, diseases and the like; it may be that consciousness is that sort of thing. If some kinds of consciousness, as the sense of beauty, are of no use in the struggle for existence, all the rest may be equally useless, — an efflorescence exhibited when there is friction due to lack of adjustment between the organism and its environment. Finally, and most plausibly, it may be argued that minds have evolved in answer to final causes, and that organic evolution must adopt the principles of psychology rather than prescribe to it.

The interactionist seems to be in a worse plight than the paral-

lelist in the conflicts with our sister sciences, but the case is different before the court of common sense. The present writer cannot conceive how the parallelist gets outside the limits of consciousness. Why does he want anything to run parallel with the only thing he knows? He becomes at once a subjective idealist, and there may be no harm in that. But when the subjective idealist wants to live in a world with other men, he reinvents the distinctions that he had verbally obliterated. What he knows about the physical world is what his senses and the physicists tell him; if he likes to call it all consciousness or the unconscious, mind-stuff, will, or God's thought, this may be emotionally stimulating, but no fact or law is thereby altered. The world may be God's thought, without in the least preventing the parallelist from thinking illogically.

If clarified experience is subverted by logic, we can of course become skeptics; but it is safer and wiser to wait awhile. Experience may become more clarified, our premises may prove to be at fault, even our syllogisms may be false. When it is said that a psychologist must be either an interactionist or a parallelist, and we find insurmountable difficulties in the way of his being either, the trouble may be with the original assumptions. Matter and consciousness may not be two entities set over against each other. A perception may be both a part of my consciousness and a part of the physical world; an object may be at the same time in a world of matter in motion and in the microcosm of my individual mind. As my colleague, Professor Dewey, starting from an idealistic standpoint, claims, we may simply be giving different names to activity when it is tensional and when it is relatively stable; or as my colleague, Professor Woodbridge, starting from a realistic standpoint, suggests, the relation of consciousness to objects may be analogous to that of space to objects.

As I have said, the relations of mind to body and the distinction between consciousness and matter are the last word of a philosophy that is not yet written, and I have no competence or wish to discuss them here. But the task has been assigned to me of considering the scope, conceptions, and methods of psychology, and it is my business to define the field of psychology or to acknowledge my inability to do so. I must choose the latter alternative. I can only say that psychology is what the psychologist is interested in *qua* psychologist. If it is said that this is tautological, it may be replied that tautology is characteristic of definitions. If psychology is defined as the "science of mind" or, what in my opinion is better, "the science of minds," the tautology is equal, and it appears to be more possible to determine by an inductive study the professional interests of psychologists than to

define the nature of mind or consciousness. Further, I am not convinced that psychology should be limited to the study of consciousness as such, in so far as this can be set off from the physical world. Psychology apart from consciousness is doubtless an absurdity, but so also is mathematics or botany. I admire the products of the Herbertian school and the ever-increasing acuteness of introspective analysis from Locke to Ward. All this forms an important chapter in modern psychology; but the positive scientific results are small in quantity when compared with the objective experimental work accomplished in the past fifty years. There is no conflict between introspective analysis and objective experiment — on the contrary, they should and do continually coöperate. But the rather widespread notion that there is no psychology apart from introspection is refuted by the brute argument of accomplished fact.

It seems to me that most of the research work that has been done by me or in my laboratory is nearly as independent of introspection as work in physics or in zoölogy. The time of mental processes, the accuracy of perception and movement, the range of consciousness, fatigue, and practice, the motor accompaniments of thought, memory, the association of ideas, the perception of space, color-vision, preferences, judgments, individual differences, the behavior of animals and of children, these and other topics I have investigated without requiring the slightest introspection on the part of the subject or undertaking such on my own part during the course of the experiments. It is usually no more necessary for the subject to be a psychologist than it is for the vivisectioned frog to be a physiologist.

James and Wundt agree in telling us that the experimental method is chiefly of use as a servant of introspection; indeed, James says that there is no "new psychology," "nothing but the old psychology which began in Locke's time, plus a little physiology of the brain and senses and theory of evolution, and a few refinements of introspective detail." But our leaders in psychology have become our leaders by belying such partial statements. Although neither Wundt nor James has attempted any considerable experimental research, yet we look up to them as the founders of modern psychology. Wundt's original and laborious *Physiologische Psychologie*, the Leipzig laboratory, and the *Philosophische Studien* have been in large measure the foundation stones of experimental psychology. The broad opportunistic treatment of James, instinct with genius and fearless of logical inconsistency, has been of immense service in freeing psychology from traditional fetters. I see no reason why psychology, at least the psychology of twenty years ago, may not be said to be the subjects treated in James's *Principles of Psychology*

and Wundt's *Physiologische Psychologie*, with such additional subjects as other psychologists have included or might have included in their treatises.

When the introspective purist says that the treatises of Wundt and James are potpourris of sciences, or that the kind of work that some of us have attempted to do belongs to physiology or to anthropometry or nowhere in particular, there is a natural temptation to reply that much of introspective and analytic psychology belongs to art rather than to science. Such things may be ingenious and interesting, like the *personae* of Bernard Shaw or the mermaids of Burne-Jones, but we don't expect to meet them in the street. An attitude of this kind would, however, be as partial as that which it seeks to controvert. Let us take a broad outlook and be liberal in our appreciation; let us welcome variations and sports; if birth is given to monstrosities on occasion, we may be sure that they will not survive.

Any attempt at *a priori* limitation of the field of a science is futile. Even if, for example, consciousness and matter in motion were distinct and distinguishable, this would be no argument against a science of physiological psychology. Cerebral and psychical phenomena form one series, and if we have at present no adequate science which concerns itself with this series, it is owing to ignorance of facts, not at all to logical limitations. Matter, time, space, and the differential calculus may be as disparate as possible, but are brought together in the science of physics. If the psychologist cannot be shut out of the physical world, still less can he be excluded from the sphere of the so-called normative sciences. If any one takes a modern work on ethics or esthetics and tries to separate the treatment of "what is" from that of "what ought to be," he will find himself engaged in an idle task.

It appears that the limits of a science are set largely by a psychological constant. A single science has practically the range that can be covered by a single mind or man. From Aristotle to Hobbes and Descartes there were philosophers who could master nearly the whole range of knowledge and advance it in whatever direction they cared to turn. But even in this period, as knowledge accumulated, specialization began, and we find astronomers, anatomists, and other students of particular sciences. After Galileo and Newton the physico-mathematical sciences became completely divorced from the descriptive natural sciences, while psychology remained under the shelter of philosophy. It was only in the second half of the nineteenth century that the accumulation of certain facts and theories warranted their becoming the chief interest of a psychologist, and even yet it is more usual for a man to pass through a psychological period than to be a permanent psychologist.

While the first result of increased knowledge has been the establishment of a number of sciences — say a dozen or a score — which have secured proselytes and to a certain extent limited and directed their activities, the further increase of knowledge must break down the artificial limitations. The late emergence of psychology has made easy an elective selection of material. We not only have psychologists who are also philosophers, but psychologists who are also physiologists, anatomists, pathologists, zoölogists, anthropologists, philologists, sociologists, physicists, or mathematicians. Psychology is and will increasingly become united with professions and arts, with education, medicine, music, painting, and the rest. Even sciences remote from psychology, astronomy, for example, may have sufficient points of contact to occupy the entire time of a specialist. We not only have combinations between the orthodox sciences, but cross-sections through them, which may to advantage occupy the student, and which have full rights to be ranked as sciences. The phenomena of vision, for example, are scattered among the sciences of psychology, physics, physiology, anatomy, anthropology, zoölogy, embryology, pathology, chemistry, mathematics, etc.; they are important factors in certain fine and industrial arts; they are the basis of one of the most important medical disciplines. Why should not a man be a “visionologist” or “sight-onomer”? When President Hall gives us an original and unique book on adolescence, nothing is gained by attempting to assign it to one of the conventional sciences. The work of Dr. Galton appears to me to be particularly unified, but it does not belong to psychology, nor to any other science. Why not call him an opportunist, or a liberal unionist, or a Galtonist, or, better still, call him no name at all?

In objecting to an artificial limitation of the field of the psychologist, I by no means want to aggrandize his office or to let psychology eat up the other sciences. The student of psychology is limited by the capacity of the human mind and of his own particular mind; he can, on the average, cover a range about as large as that of the student of any other science. If he would gladly get, he would also gladly give. If he is an imperialist who would set his flag on every corner of the earth, he yet tears down no other flag, and welcomes the invasion of his own territory by every science.

As I claim for psychology the freedom of the universe in its subject-matter, so I believe that every method of science can be used by the psychologist. The two great achievements of science have been the elaboration of the quantitative method, on the one hand, and of the genetic method, on the other. The uniformity of nature and the rationality of things are here presented in their most con-

vincing, or at all events most plausible form. It would be an irreparable limitation if either of these methods did not apply in psychology. In my opinion they not only do obtain, but must obtain. The mental and the physical are so inextricably interfused that quantitative and genetic uniformities could not exist in the physical world if absent from consciousness. If our mental processes did not vary in number, if they did not have time, intensity, and space relations, we should never have come to apply these categories in physics, chemistry, or astronomy. I am not prepared to attempt to clear up the logical questions involved; when water is muddy it is often wise to wait for it to settle rather than to keep stirring it up.

Under the conditions of modern science nearly all observations are experiments, and nearly all experiments are measurements. A sharp distinction is usually drawn between an experiment and an observation. Thus Wundt, following Mill and other logicians, defines an experiment as an observation connected with an intentional interference on the part of the observer in the rise and course of the phenomena observed. But it is as properly an experiment to alter the conditions of observation as to alter the course of the phenomena observed. If the astronomer goes to the ends of the earth and photographs a solar eclipse, making all sorts of measurements and calculations, we may say that this is an observation and not an experiment, but we have not made a useful definition; neither do we gain anything by deciding whether it is an experiment when a baby pulls apart a doll to see what is inside. The real distinction is between the casual experimenting and observing of daily life, and the planned and purposive experiment and observation of science. Science is experimental *qua* science.

I consequently object to making experimental psychology a branch of psychology. It is a method in psychology, which is extended just as rapidly as psychology becomes a science. The purely introspective or analytic observer does, according to the current definition, continually make experiments, because his introspection itself alters the process that he is observing, thus sometimes making his observations invalid as a description of natural conditions. On the other hand, the student in the laboratory may measure the process without any introspection or interference with it, and this may not be technically an experiment at all, but it gives a scientific description of the normal course of mental life. We are told that Adam gave a very appropriate name to the hog; science is not always so fortunate in its nomenclature.

Most experiments, letting experiments mean attempts to increase scientific knowledge, are also measurements. Measurement is only a description; but it has proved itself to be the most economical, wide-reaching, and useful form of description. What language was

for the evolution of primitive man, measurement is for the advance of modern science. As a word selects similarities and ignores differences, so a measurement selects certain similarities from the concrete manifoldness of things. That such a great part of the world can be described in terms of a few units of measurement, and that this description should lead to such useful applications, is truly marvelous and admirable. As I am writing these paragraphs, I have received a manuscript in which the author explains that the fact that the earth rotates on its axis in twenty-four hours, not varying a second from day to day, is a conclusive proof that it was created and set rotating by a benevolent being. If the days were shorter, he says, we could not get our work done, and if the days were longer, we should be too tired by night. It almost seems as though the world were made in such comparatively rational fashion in order that we may measure it.

The physicist counts, and he measures time, space, and energy. He has intractable matter with its seven and seventy elements, and he may come across a substance as complex and perplexing as radium. But by and large he can describe his world in certain quantitative formulas. It is true that he accomplishes this in part by unloading on psychology qualitative differences, such as colors and tones. So much the more satisfaction to us if we can reduce them to quantitative order. Perhaps we shall have only partial success; but it may fairly be urged that psychology has done as much in this direction in fifty years as physics accomplished until the time of Galileo, or chemistry until the time of Lavoisier.

The psychologist counts, and he measures time, space, and intensity. Even if it were true — I think it is not true — that mental magnitudes are not measurable, it would none the less be the case that mental processes are described in quantitative terms. This is attempted and accomplished in most of the researches published in our psychological journals. They describe measurements and the correlation of quantities; they show that a mental mechanics is more than a possibility.

The physical sciences have been primarily quantitative, and the biological sciences are primarily genetic, but the physical sciences must become genetic, and the biological sciences must become quantitative. Psychology is from the start both quantitative and genetic. It may indeed be claimed that it is the science in which the genetic method has the most complete application. Every mental state, and every form of activity, is the result of development from previous conditions. If explanation, as distinguished from description, is possible anywhere in science, it is possible here. It is certainly difficult to penetrate by analogy into the consciousness of the lower animals, of savages, and of children,

but the study of their behavior has already yielded much and promises much more. Although those who make their psychology coterminous with introspection cannot enter far into this field, they still have their own genetic problems. In whatever direction we turn, the harvest is waiting; it is only the reapers who are few. Almost every observation, experiment, or theory of organic evolution offers parallel problems for the psychologist. The development of the individual opens questions more numerous and more important for psychology than does the development of the body for other sciences. Senile, degenerative, and pathological conditions are all there for psychological investigation. The evolution of society and the interrelations of individuals are being gradually brought within the range of genetic psychology. It is quite possible that the chief scientific progress of the next fifty years will be in this direction.

The problems of psychology are certainly made endlessly complex by the fact that we have to do, not with the development and condition of a single mind or individual, but with innumerable individuals. The traditional psychology has been disposed to ignore individual differences; but in attempting to prescribe conditions for all minds, it becomes schematic and somewhat barren. It is surely wasteful to select those uniformities that are true for all, and to throw away those differences which are equally fit material for scientific treatment. Linnæus instructed his pupils to attend to species and to ignore varieties, and this in the end tended to make systematic botany and zoölogy unfruitful. If the zoölogist had limited his work to the discovery of facts that are true for all animals, and had ignored the differences between animals, he would have done something analogous to what the psychologist has actually done.

It may be that individuals cannot be grouped into species, or even varieties, but animals and plants are separated into species in accordance with the noticeable differences between them, and there are as many degrees of just noticeable difference between men as between related species. We have in any case the different species of the animal series and the different races of men for psychological study; it may be that instincts and mental traits have specific or racial significance for the zoölogist or anthropologist. We have the infant, the child, the adolescent, and the aged; we have the two sexes; we have the geniuses, the feeble-minded, the criminals, and the insane, — complex groups, to be sure, but open to psychological investigation. It may be that mental imagery or types of character will give workable groups. But even if mental traits and their manifestations are continuous, we can study the continuum. The study of distribution and correlation

appears to open up subjects of great interest and having important practical applications.

The question of the practical applications of psychology is the last which I shall touch. There are those who hold that there is something particularly noble in art for art's sake, or in science divorced from any possible application. We are told of the mathematician who boasted that his science was a virgin that had never been prostituted by being put to any use. It is doubtless true that science justifies itself if it satisfies mental needs. It may also be true that pure science should precede the applications of science. But of this I am not sure; it appears to me that the conditions are most healthful when science and its applications proceed hand in hand, as is now the case in engineering, electricity, chemistry, medicine, etc. If I did not believe that psychology affected conduct and could be applied in useful ways, I should regard my occupation as nearer to that of the professional chessplayer or sword-swallower than to that of the engineer or scientific physician.

It seems quite obvious that such knowledge as each of us has of his own perceptions, mental processes, and motor responses, and of the reactions and activities of others, is being continually used, more continually, indeed, than any other knowledge whatever. This knowledge is partly organized into reflexes and instincts; it is in part acquired by each individual. Control of the physical world is secondary to the control of ourselves and of our fellow men. The child must observe and experiment to fit itself into the social order, and we are always experimenting on it and trying to make it different from what it is. All our systems of education, our churches, our legal systems, our governments, and the rest are applied psychology. It may be at present pseudo-science, in the sense that we have drawn conclusions without adequate knowledge, but it is none the less the best we can do in the way of the application of systematized knowledge to the control of human nature.

It certainly is not essential, and perhaps it is not desirable, for every mother, for every teacher, for every statesman, to study psychology, especially the kind of psychology at present available. It is not necessary for a man to be either a psychologist or a fool at forty; he may, for example, be both. But surely it is possible to discover whether or not it is desirable to feed a baby every time it cries, to whip a boy when he disobeys, or to put a man in prison when he breaks a law. If each man were given the work he is most competent to do, and were prepared for this work in the best way, the work of the world, all the way from the highest manifestations of genius to the humblest daily labor, would be more than doubled. I see no reason why the application of systematized knowledge to the control of human nature may not in

the course of the present century accomplish results commensurate with the nineteenth-century applications of physical science to the material world.

The present function of a physician, a lawyer, a clergyman, a teacher, or a man of business is to a considerable extent that of an amateur psychologist. In the inevitable specialization of modern society, there will become increasing need of those who can be paid for expert psychological advice. We may have experts who will be trained in schools as large and well-equipped as our present schools of medicine, and their profession may become as useful and as honorable. Such a profession clearly offers an opportunity to the charlatan, but it is not the only profession open to him. For the present the psychological expert should doubtless be a member of one of the recognized professions, who has the natural endowments, special training, and definite knowledge of the conditions that will make his advice and assistance of value. But in the end there will be not only a science, but also a profession of psychology.

THE HISTORY OF PSYCHOLOGY

BY JAMES MARK BALDWIN

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THE science of psychology essentially reflects in its development the way the human mind has been able at various epochs to apprehend itself. The thought of any object is simply the conscious construction of that object; and this is as true of the sort of object — the mind — with which the science of psychology deals as of the object of any other science. As long, for example, as animistic views prevailed, a thorough-going positivistic treatment of the objective world was impossible; for the object constructed was not subject to regular law nor continuity of transformation and change. So, also, as long as the animal body was considered an exception to the positivistic process, biology could not be a thoroughly developed natural science; for its object was a centre of capricious and mystically motivated changes. This is true of psychology, and more emphatically. For the object of the science of psychology is the mind, the object which it constructs from its own experience; that is, its object is just its own positive view of itself. We are accordingly led to see that the history of psychology is the history of the stages or modes of the evolution of reflective consciousness of self.

I. Greek Psychology

The evolution of psychological views among the Greeks is capable of fruitful interpretation from this point of view. The earliest views were necessarily those possible at a period of which the dualism of mind and body — self and external world — had not been achieved. The so-called "materialists" of Greece — who, just for the reason now given, would better be called "protists," "pro-noists," "project-

ivists" (I shall use this last term), or something of like import, — looked upon nature as the "one," "the undefined," a moving labile object (water, air, etc.). And it is characteristic of their views that they did not — because they could not — go on to make distinctions and differentiations in the lines of later more mature reflection. The period of their thinking in the history of opinion corresponds to the early adualistic or "projective" period in the individual's personal development. The individual has a certain objective mass of material, "protoplasmic" in a figure, in which the dual reference to subject and object is not yet attained. The world, to such an individual, is one of "first-appearance" — not of matter and mind, nor of anything else which gives an antithesis of poles of reference. So the early thinking of the race was in this sense unreflective. The process of its theoretical interest did not lay apart its material in substantial categories; but it answered the question "what?" by the assertion of the sort of predicates which were its possible objective constructions at that stage.¹

The positive character of this first period, however, shows the transition motive to certain later dualisms: the character of animation, movement, change. In this respect, the Ionics suggest a further movement in the child's development. The immature reflection of the individual finds, in the perception of animation and capricious movement, the road toward a solidified and conereted dualism. Through this type of reflection the world-circle closes in somewhat upon the personal centre. It neglects the fixed, changeless, inanimate things of the world, as in so far unexistent or hypothetical. In respect to them, the senses deceive. So in the thought of Heraclitus and Parmenides the becoming or change principle played its rôle, and the Greek mind began its career toward a form of dualism in which the "fixed" was of logical or contrast value, mainly, not an objective category.

In this general epoch, the "projective," in the development of Greek thinking, we must place also the *voûs* principle of Anaxagoras. It was a principle in the line of the vitalistic or change hypothesis; and it remained, indeed, only a postulate of order, movement, immanence in the world. It was not a subjective, nor yet an objective (a subjective) principle. So far as it implied a dualism, it was one — that predominant one in Greek thought — of matter and

¹ This is not to say that the adult person himself — for example, such a thinker as Thales — was not self-conscious, and did not deal practically with the problem of self *vs.* things; but only that, in his reflection, he did not segregate the elements of his one general experience in explicit dualisms, nor consider the objects in the two spheres of practical experience as separate and distinct.

It may be explained here that I use the term "object" (and its adjective form "objective") of *any cognitive construction whatever* — anything that may be known or thought about.

form, not of subjective and objective. It may possibly be considered as in so far an unreflective anticipation of Aristotle's biological point of view, — so much, indeed, is possible, — but it was not in any sense an anticipation of the subjective point of view from which a science of psychology could isolate its peculiar matter. This accounts, no doubt, for its unfruitfulness in later thought.

The real isolation of the subjective or "inner" seems to have begun with the Atomists, Leucippus and Democritus, in their famous doctrine of the relativity of the sense qualities.¹ This intuition led perforce, just as the same type of phenomena — the relateness and deceptiveness of qualities, colors, odors, etc., in things — leads the child, to the wider question whether the "inner" is not a sphere to be distinguished from the "outer." Indeed, in Democritus this antithesis is actually and fruitfully made. His other great doctrine, that of the "atoms," was thus made possible, and has remained possible for all time; for by definition the "outer" had to be stripped of those relative and ambiguous predicates which had embarrassed earlier speculation. The atoms could do their work in the body of external reality; and the mind could do its separate work of knowing that reality. This was a real advance upon the doctrine of "elements" as held by Parmenides and Empedocles.

The subjective postulate, thus once arrived at in the individualistic sphere of sensation, was to be carried out in the general sphere of truth by the Sophists; indeed, it was forced upon them by the social and intellectual conditions which made men Sophists in their generation. In the Sophists began the play of certain forces akin to those which we find enormously germinal in the narrower sphere of the individual's personal growth. And in this our present method has further justification.

The growing consciousness of personal quasi-subjective detachment from the world of impersonal things comes to the child through processes analyzed variously into motives of conflict, imitation, invention, discussion (and from the psychic point of view, introjection, absorption, realization) — a give-and-take or dialectical process between the individual and his fellows. In it all the essential fact of subjectivity in the actor's thought of himself and others comes to birth. The actor becomes an agent; the observer, a creature of reflection; the spontaneous thinker, a possible amateur psychologist.

All this appears, there can be no doubt, in the Sophistic movement; and out of it, indeed, the first race-psychologist was born, — Socrates. In the views and methods of Socrates are focused the rays which are to burn inward to the core of the human self. This appears true of Socrates in the following precise points.

¹ Cf. Gomperz, *Greek Thinkers*, vol. 1, pp. 320 ff.

(1) The Sophistic principle, *homo mensura omnium* (Protagoras), formulates the thought of an active and constructive centre in the individual. The individual's or human nature's reaction to the world gives all the measure there is for things. In Socrates this principle was developed in an anti-individualistic or social sense.¹

(2) The contrast between "opinion" (δόξα) and "reason" (νοῦς), sharply brought out by the dialogue method in the hands of the master, Socrates, and developed by his disciples, now becomes more positive.

(3) The view that truth is in general a thing of thought in so far eternal and immutable, — not, as in the earlier transition stage, a function of a principle of change essentially indeterminate in character. This is the germ of Plato's "idea" in which reality becomes explicitly an ideal postulate.

(4) In Socrates the way is opened to the form of dualism of mind and matter found in Plato's doctrine of matter (ἐλγή).

Not stopping to develop these points, — time does not allow, — we may still say that Socrates was mainly a Sophist, not a clear subjectivist. He reached subjectivism only so far as it was involved in a dualism of the general (truth) and the particular (appearance), and that in an experimental and controversial way.² He did not realize the thought of mind as a psychic content in distinction from body.

Had Plato been possessed of the scientific interest, this distinction might have been made then and there; for Plato deduced a principle of matter. But, like Anaxagoras, with his postulate of mind, Plato's "matter" remained a logical contrast principle, over against "form," — a particular over against the general, — not a concrete reality; and the philosophy of reality was to remain a rule of vibration between logical poles, rather than a synthesis of reflection.

So far as a science of psychology goes, Plato must be classed with Socrates in what we may call the period of "experimental subjectivity."

In Aristotle, no less than in Plato, it is the outward movement of thought into reality that has the emphasis, not the development

¹ Against the individualistic interpretation for the Sophists generally, especially Protagoras, see Gomperz, *loc. cit.* I, 451 ff.

It is confirmatory of the parallel made in the text between the Sophist's and a stage in the individual's thought to note that Socrates' position was not in its nature individualistic, but was reached and maintained in the midst of social opposition and discussion. The Socratic method was a social dialectic, or give and take. I do not know of any adequate exposition of the social — political, religious, etc. — factors which produced the Sophistic movement; but an account of a later analogous period — the rise of the Post-Aristotelian schools — is given in admirable terms by Caird in his *Development of Theology in the Great Philosophers*, II, lect. xv.

² The way which, when illustrated in the individual's development, I have called the construction of a "semblant" object — a matter of psychic experimentation with materials, akin to the child's playful and esthetic imaginative constructions.

of the subjective as psychic. This movement is that described in modern genetic psychology as "ejection": the reading of the subjective into the external and the interpretation of the latter in terms of some aspect of the world of thought. This reached its clear statement in Plato's doctrine of "ideas," that is, so far as the "idea" itself was defined. It required a theory of the idea, however, only so far as that conception was to serve the metaphysical purpose. It did not require, nor did it receive, independent treatment, as the object of scientific research or even as content of consciousness. The dualism, however, was only a mediating phase of the return to a deeper monism or idealism: that of the unity of the particular and the universal. And in Aristotle, whose scientific impulse was strong, this reading of the subjective into the objective remained — in the doctrine of matter and form — a way of accounting for the organic character of the presented and objective world. It did not become a way of detaching the subjective. This is to say that Aristotle's point of view, in discussing the facts of mind, is more biological than psychic or psychological. Mind has definition as the form of the animal body; and while this implies a reciprocal definition of body, — as material for the realization of form, — nevertheless the emphasis is not on mind as such.¹

Aristotle illustrates, indeed, an important fact in the history of science in general: the fact that positivism may be embodied in a scientific method before the criticism of the material is well advanced, and that the sciences of the objective order are usually well along before the corresponding sciences of the subjective order attain their emancipation. The reason of this limitation in the case of Aristotle appears when we turn again to the parallelism between the individual's and the race's growth in self-consciousness. The embodiment of the thought-content in things, by "ejection," or, as the anthropologists say, by "personification," suffices for a theory of the world which is animistic and vitalized, — for hylozoism, that is. But this does not go beyond Plato. The next step is to reach, with Aristotle, a naturalism of the objective order, by the correction and limitation of the animistic concept. This the individual does on his part by the return movement of his thought, whereby he reabsorbs a body of predicates into the "inner" sphere. The psychic becomes, by this movement, the theatre of the more lawless, capricious, and unmanageable phases of appearance, and the world order remains what is left, — the regular, the manageable, the lawful. The fixed, before neglected, now becomes the essence of things. It is, no doubt, a practical distinction at first, and only afterwards becomes the

¹ This is not to say, of course, that Aristotle did not make many valuable contributions to empirical psychology; he did. But still it is true that he did not develop a distinctly psychic method of treating consciousness.

subject of that theoretical interest which develops its positivism first of all in the objective realm. So the rise of science of the objective becomes possible. But not yet, evidently, can the psychic find corresponding treatment, as law-abiding and uniform in its movements; for if the inner sphere be constituted just by the segregation of materials in so far practically unmanageable, the theoretical treatment of them is thereby baffled; and a science of these contents must await the rise of a reasoned positivism of the inner life.

It is necessary to point this out, for it explains certain negative aspects of later historical movements — and why psychology as a science of content was so late a growth. In two later world-epochs, in particular, and in their respective world-thinkers, something of the same situation presents itself. I refer to the rise of modern dualistic philosophy in Descartes, and the rise of Positivism of the stricter sort in Auguste Comte.

II. *The Dualistic Transition*

The transition to Descartes was made through the Stoics and the theologians of the Christian Church. The Stoics, reacting against the practical individualism of the Cynics and Cyrenaics, reached the concept of a sort of general selfhood which guaranteed law and order and virtue. This was a practical and eclectic rather than a reasoned attempt to overcome the dualism of their immediate predecessors.¹ The church theologians reasserted an individualism, but to them the individual became spiritual.

In these precursors of Descartes there was worked out a genetic motive which is unmistakable also in the individual's development: I mean the advance or progression from a dualism of "inner-outer" to one of "mind-body" — from what may be called a distinction of attributes to a distinction of substances. The individual proceeds, in his generalization, to carry over the physical part of his own person — separating it substantially from the psychic part — to the side of the "outer" as such. It is only when he is able to do this, *and does it*, that the dualism of mind and body is anything like complete. The substantializing of the mental principle which has so far proceeded by certain curious stages — being variously a refined physical something, a breath, the limiting notion and form of matter — now finally becomes the hypostatized substance which bears the psychic qualities. The substance soul does finally become logically detached, but mainly for theoretical and doctrinal purposes;² for even then soul and body remain in

¹ Cf. Caird, *loc. cit.*, lect. xvii.

² The earlier crass doctrine of transmigration, as in the Orphics and in Empedocles, did not involve a reflective dualism; for the soul was not defined as

so far attributal to each other, that either can be predicted on occasion as either cause or effect with reference to the other. This was notably true in the entire church development; and the view is still dominant in theology. This cause and effect bond is the last one that remained to be loosed.¹

In Descartes, for the first time in the history of thought, certainly of Occidental thought, is the psycho-physical problem specifically set in the form of the conception of a natural relation between mind and body, considered as two separate substantial principles. The problem becomes: what is the relation? It assumes not only the dualism of the two terms, but their actual separation. Descartes not only reaches such a dualism, but he sets up the full relational problem of mind and body. And further, he identifies the spiritual principle with "inner experience" or "thought." He is in advance of the church philosophy in this important respect, that while, to the latter, it was a problem of *separating mind and body*, to Descartes it was a question of *bringing them together again*. Descartes said that interaction was impossible; and the theory of preëstablished harmony was the alternative.

Why, then, it may be asked, did not a purely naturalistic psychology begin with Descartes? For much the same reason, I surmise, that it did not begin with Aristotle: because Descartes did not conceive the inner principle, the soul or thought, in terms of continuous and lawful change. Just in this was it contrasted with body. Extension is the sphere of geometry and physics; thought is the source of spiritual manifestations; and these two domains of fact, though parallel, are essentially heterogeneous. That this is true of Descartes is proved historically; just as the corresponding fact comes out in the comparison of Aristotle with Socrates. In each case a monistic idealism followed, not a scientific naturalism. Socrates was followed by Plato, Aristotle by a new mysticism, while Descartes led right on to Spinoza. In each case, we find an attempt to transcend the specific form of dualism of its own period.²

a principle. When the dualism arose, however, such views availed themselves of so much support, just as modern theology supplies a doctrine of immortality in support of the early anthropological belief in a world beyond. Put in psychological terms, we may say that such early religious and anthropological views were object of practical and, in some cases, esthetic interest, but not of the sort of theoretical interest which leads to philosophical inquiry.

¹ I have pointed out elsewhere (*Psychological Review*, May, 1903) that the case of mind and body is the last instance of that sort of commingling of substances and forces. It is present in all the forces involved in "interaction" theories.

² It is an interesting point that in each such case, the supposed reconciliation is not logical, but, in a broad sense, esthetic: the motive in Plato is poetic, in the Post-Aristotelians it is mystic, in Spinoza it is religious, — a matter it would be well to expound in its own place. It has its parallel, moreover, in the individual's mode of treating his dualisms, *i. e.*, by the construction of objects which are valid from esthetic points of view. This is, I think, the normal genetic outcome.

III. *The Postulates of Modern Scientific Psychology*

From the preceding exposition, I may venture to draw certain inferences of a negative sort: statements of what the thought of the earlier centuries lacked; and follow that with the positive characters belonging to the nineteenth-century science.

What the earlier thinkers lacked, then, was (1) a full naturalism in their point of view: a naturalism which could follow only upon a critical dualism of mind and body. Grant the dualism of inner and outer, take the further step to that of mind and body, then — and this is the needful thing for naturalism — admit the oneness of the knowledge of nature as a whole in the face of the cleft in nature which the dualism postulates. The thinkers we have been considering did not achieve this last step. They worked out their theoretical interest by establishing a philosophical solution of the dualism, or, on the other hand, resorted to an esthetic handling of it.

(2) They did not achieve a positive way of treating all data as material of knowledge as such, material to be progressively systematized and enlarged by research. The former is the full scientific point of view; the latter is its method and instrument.

What modern psychology has in addition is just the something that these early thinkers lack:

(1) *Naturalism*,¹ or the view that all events or phenomena whatever are part of a natural order, and are subject to general and ascertainable rules of sequence.

(2) *Positivism*,¹ or the view that a methodology — a theory and practice of method — of research is possible, for the discovery of the rules or laws which govern the sequences of the natural world.

Both of these scientific postulates hold for psychology. They have long been established in the physical or exact-quantitative sciences; they have been slow of formulation in the biological sciences; they are only beginning to have adequate recognition — especially, the second of them — in the mental and moral sciences. It is the characteristic feature of nineteenth-century psychology, that it has developed the first of these postulates fully and the second partially.

IV. *History of Nineteenth-Century Psychology*

The nineteenth century opened at a natural pause in the evolution of theories about the mind. In the flow of the great currents, certain eddies had formed late in the eighteenth century.

¹ It should be noted that I speak of *scientific*, not of *philosophical* naturalism and positivism.

The dogmatic movement in Germany had passed over into the critical; and Kant had attempted a new esthetic reconciliation of the dualism of inner and outer. The Kantian psychology or anthropology is essentially a renewed subjectivism — that is, so far as it is “critical.” Neither scientific naturalism, nor positivism in the sense defined above, profited greatly from the work of Kant. Indeed the explicit attempt to refute Hume — to go no deeper — throws the weight of Kant as authority on the side of an essentially obscurantist attitude toward facts. Note the arguments in favor of *a priori* space and time, which very little careful observation would have materially modified. And historically Kant led the way to what Höffding calls the “romantic movement,” from Fichte to Hegel.

Again in France an impulse was asserting itself away from the materialism of the sensationalists toward the naturalism of Rousseau. Rousseau’s recognition of the psychic involved a truer naturalism than the view which denied the life of ideas and of all higher functions in favor of a sense-process materialistically interpreted. Neither Rousseau nor Condillac, however, combined both the two postulates.

In England a science of psychology was emerging at the opening of the nineteenth century. Locke had broached a subjective naturalism, which the French sensationalists, as I have just intimated, developed on one side only. Hobbes was a positivist in much the same sense for our purposes as Comte. But in David Hume the two requirements of a true science of psychology were consciously present. Hume treats mind as a part of nature, — this is naturalism, — and he also works at the problem of discovering the laws of mental change by actual observation, — this is positivism. He is justified in both by his results; he is further justified by his extraordinary historical influence.

If then we are justified in saying that David Hume is one parent of the science of psychology, — in the sense of the word that places this subject in line with the other natural sciences both as to its material and to its method, — then we have to look for the other parent, I think, to France. Dropping the figure, we may say that, in Rousseau, France contributed an essential moment to the development of the science. Possibly this contribution should be called the Rousseau-Comte factor; as possibly also the British contribution should be called the Locke-Hume factor.

The influence of the Rousseau-Comte factor, which is to-day more undeveloped than the other, but is now becoming fertile, may be shown by an appeal again to the analogy with the individual’s growth in personal self-consciousness. And as intimation of my meaning, I may refer to the Rousseau-Comte *motif* as the “social”

or "collectivist," and to the Locke-Hume *motif* as the "personal" or "individualistic."

Taking up the genetic parallel, we may remark that the development of the positivistic postulate by Locke, Hume, and the Mills, *in an individualistic sense*, has proved inadequate, so far as it claims to exhaust the psychic matter. In the development of the individual the rise of the thought of a separate personal self is a late outcome of reflection. The early stages of dualistic thought are in so far social that the mind-body dualism is an abstraction in both its terms. Mind is many minds; and body is many bodies. The material of self is collective and distributive, not unitary nor individual. The child thinks self as a term in a social situation.

If this be true, the science of mind must be one in which the abstraction of an isolated individual mental life is to be used as an instrument of method rather than as a truth of analysis and explanation. And there should be a science of psychology in which the material is, so to speak, social rather than individual. This point has been worked out only in recent literature, but its advocates may find the source of this type of view in the French thinkers now under discussion.

Besides these two great movements, credited respectively to Great Britain and France, modern naturalistic psychology has had two important impulses. The first of these came about the middle of the century in the rise of the evolution theory, and from the side of biological science; the other from German beginnings, and from the side of physical science. I shall speak of these respectively as genetic psychology, finding its pioneers, Lamarck and Darwin, in France and England, and experimental psychology, founded by the Germans, Fechner and Lotze.

The various factors now distinguished may be taken up briefly in turn for consideration. I shall treat them under the two larger headings already set forth: *Naturalism*, comprising (1) the British movement called above the Locke-Hume factor (empirical psychology), and (2) the French-British evolution movement (genetic psychology); and *Positivism*, comprising (1) the Rousseau-Comte movement (social psychology), and (2) the German experimental movement (experimental psychology).¹

¹ These two headings are indeed not exhaustive nor mutually exclusive. The viewpoint respecting the material cannot fail to influence the method; nor the method the selection of material. For example, the Rousseau-Comte current is a direct gain to naturalism no less than to positivism; and the opposite is true of the Locke-Hume movement.

The scientific treatment of mental diseases is also a most important matter, which should be classed under positivism or positive method. It is not within my province — nor is the time ripe, I think — to estimate it. Its development is one of the great tasks of the twentieth century (*cf.* Meyer, *Psychological Bulletin*, May-June, 1904, for an exposition of present-day tendencies and theories).

As it happens, it fell to the present writer to draw up a report on psychology

Before proceeding, however, it may be well to give a résumé of principles, — the platform upon which the entire development is projected. This platform is that of cognitive and reflective self-consciousness of such a sort as that which the individual has attained when he thinks of his inner life as a more or less consistent unity, passing through a continuous and developing experience: a self different from things, and also different from other selves; yet finding its experience and exercising its functions in closest touch with both. And furthermore this touch with things and persons is so close that, whatever his reflection about himself may lead to, he accepts the facts, (1) that the world as a whole *includes himself and others in its larger uniform processes*, and (2) that the methods of its treatment of him *through his body*, are also his methods of handling it. The individual must be, that is, *first*, a somewhat careful naturalist, and also *second*, a somewhat skillful positivist; and it is only when there is the reflection of *this sort of self-consciousness into the scientific endeavor of the race* that there comes a time ripe for a truly scientific psychology.

IV. Nineteenth Century Naturalism

British Empirical Psychology. The empirical movement reasserted in John Locke the subjective point of view reached in the dualism of Descartes. Furthermore, it attained in David Hume the return movement from a pure naturalism of the objective only to a corresponding naturalism of the subjective. Locke's subjectivism is seen in his doctrine of primary and secondary qualities, in which he renewed the relativity of Democritus and the Cynics, and in his polemic against innate ideas. Hume's subjective naturalism appears in his entire work. Hume's theories of ideas, belief, substance, cause, all testify to his complete absorption in the thought of the psychic as a law-abiding and continuous flow of events.

The most explicit result of this point of view appeared, however, in the theory of Association of Ideas, upon which the school of British empiricists founded their psychology. James Mill, J. S. Mill, Thomas Brown, and Alexander Bain are the figures which are drawn large upon the canvas of associationism in the nineteenth century. The theory of association, considered as a formula of general explaining value, was epoch-making historically, inasmuch as it was the first general formulation made from the new point of view.

for the other great American Exposition, that at Chicago in 1893. That report, entitled *Psychology, Past and Present* (published in the *Psychological Review*, and now incorporated in the volume *Fragments in Philosophy and Science*), goes into greater detail respecting recent movements and literature, with special reference to conditions in the United States.

In France, something in some degree analogous appears in the writings of Condillac and his associates before the voluntaristic reaction of Maine de Biran and Jouffroy. The postulate of sensation was indeed a naturalism, as has been said above; but it was not motived in strict philosophical neutrality, nor did it issue in a general formula. At the same time it served to establish the Lockian tradition on the Continent, and to furnish a shibboleth which, though destructive enough from other points of view, nevertheless helped to clear the way to a saner empiricism. It should be noted, too, that there were in Germany sporadic intimations, and more, toward a fruitful naturalism; but that these remained without great influence — notably the remarkable work of Beneke — and had to be reformulated in later times, shows that, as matter of fact, the naturalistic movement did not receive any indispensable support from Germany.¹ Beneke's advanced positions, it is fair to add, are only now becoming generally known as anticipations of certain important genetic principles.

The outcome of this great British movement is an established empirical tradition. The gain is seen, on one side, in the soil tilled for the sowing of evolution seed; it appears again in the established spirit of patient research which is the life-blood of science. In Alexander Bain we have the summing-up of the results for the whole mental life; as in Herbart, in Germany, we find them illustrated in a new Intellectualism; and in Herbert Spencer, their further development on a Lamarckian platform. In Spencer, it is true, the psychological point of view served the need of a larger philosophical purpose; but he shows that the naturalistic habit of mind had become so fixed that the association psychology could be recast on evolution lines, while claiming still that violence had not been done to its essentially empirical spirit. A later author, in whom the positivistic method is well realized, but in whom the genetic spirit is not fully developed, is William James; and still another, who will be named below as one of the pioneers of the experimental psychology, Wilhelm Wundt, is not only not genetic in his naturalism (being neo-vitalistic), but has also a corresponding limitation upon his method, in spite of its positivistic claim (being somewhat obscurantist in his demand that psychology shall yield support to a philosophical voluntarism).

French-British Evolutionism; Genetic Psychology. The rise of the genetic evolution theory in biology supplied the direct motive to a psychology. Lamarck himself recognized the psychological factor in one of his general principles — that in which he formulated the

¹ Indeed, this might be put more strongly; for the era of the Enlightenment in Germany brought a reaction toward the more mystical evaluations of experience based on feeling — e. g., in Tetens and Schleiermacher.

function of mind as effort, struggle, etc., in modifying the organism to accommodate it to the environment. The explicit application, however, of the Lamarckian theory was due to Herbert Spencer, in whose work we recognize a conscious attempt to work out an evolution theory of mind, as a branch of general cosmology. It is interesting that it was in the same generation, indeed in the same decade, that those other Englishmen, Darwin and Wallace, gave both biology and psychology alike an impulse which has established a genetic science. For Lamarckism is not positivism; only in Darwinism did a thorough-going positivism of method supplement and correct the naturalism of Spencer and Lamarck. The contribution consisted in the extending to mind of the methods of positive and comparative research, and the formulation of a principle, that of natural selection, which established genetic continuity and by which research has since been directed and controlled. It is somewhat remarkable that Lamarckism never secured the hold upon the minds of psychologists that it did upon those of biologists; and the progress to Darwinian positivism has had real reinforcement from workers in our science.

Now — at the end of the nineteenth century — the genetic principle is coming into its rights. It has done most service hitherto negatively, in its antagonism to a psychology exclusively associational, on the one hand, and to one exclusively structural, on the other hand. The earlier science was debtor, in its structural concept, to physics; it was a positivism of the atomistic or agenetic type. The latter is debtor, in its functional concept, to biological science; it is a positivism of the developmental or genetic type. However fruitful the atomistic, structural psychology has been, it has had its word, and it is not the final word. A great era of research is upon us in the treatment of consciousness as a thing of functional evolution in the race, and of personal development in the individual. This general psychology of the future has been prepared for in the physical mode of psychologizing, just as the general biology of the present was prepared for by the anatomical science of life which preceded it.

Among those whose names should be mentioned as contributing either to the Lamarckian or to the Darwinian form of the genetic principle are Haeckel and Weismann in Germany; and among those powerfully aiding its acceptance in their respective countries are Ribot in France, Morselli in Italy, Romanes and Huxley in England, and John Fiske in America.

V. Nineteenth Century Positivism

French Positivism ; Social Psychology. In France the progress of naturalism, in matters psychological, was much more rapid, and

its victory more complete, than in England and Germany. This difference is due, I think, to the different attitudes taken in these countries respectively toward the theory and practice of religion. In France, the theological bias and restraint, in which a certain conception of the mental principle was involved, were done away with before and during the revolution; and a positive scientific method was resorted to, to replace the theological — as witness Comte's actual attempt at a religion of humanity. In England, Germany, and America, on the contrary, while the growth of naturalism has gone on apace, the actual realization of scientific method has been slow and difficult. Such a step involves the giving-up of vitalism and the theory of interaction of mind and body, together with other formulations in which the theological spirit has lately taken its stand.

In Auguste Comte we have a thinker whose dualism was ripe for a scientific psychology, but who nevertheless failed to achieve the point of view of law-abiding or subjective change. Comte was *assez positif* in his claim. He took up the problem of an independent science of psychic processes; but from failure to recognize the subjective as such, denied its possibility. His objective monism is seen in his view that it is through the objective or positive series of facts, biological and social, that the psychic series is to be done justice to, — classified, arranged, and explained.¹ It is the reverse swing of the pendulum to that of subjectivism, though from a different theoretical support. It does not solve the dualism; as the idealistic monisms of Plato and Spinoza did not. And it parallels practically the same stage of individual reflection as these systems: that which recognizes the futility of the half-mature dualisms of practice and common sense. But in Comte the practical and the methodological were prominent, and he was urged on to justify the sort of naturalism in which these two motives issued. This he did by asserting the essential fragmentariness and capriciousness of the psychic as such; while he should have held to a larger naturalism, in which the external and the psychic each develops its own positive method.² Of course it is no reconciliation of two terms to deny one of them; and such a procedure has not the merit of esthetic synthesis which we find in the great monisms. But nevertheless, the assertion of the universal claim of positive method was of the first importance: it carried forward one of the great naturalistic movements of history.

While the fruitfulness of the positivism of Comte was thus in science in general, not directly in psychology, yet it was only his

¹ His inconsistency is seen in his appeal to the subjectivism of Kant's relativism of knowledge to refute metaphysics, while using the objective order to refute the subjective point of view of Condillac and the spiritualistic school.

² This was done by the school of English positivists who followed Comte in his attitude toward metaphysics.

personal convictions that hindered his coming into the psychological heritage as well. As it was, the spirit of his teaching awaited its working-out in a later generation. It was to the profit of sociology; for his negative answer to the question of positive psychology was possible only because of his affirmative answer to that of social science. The positive bearing of Comtean positivism comes out, therefore, in two ways: first, as announcing a general method, and second, as preparing the way for a social psychology which should reconstitute part of the domain assigned to sociology — that of psychic and social experience — in a separate science.

As to this latter undertaking, — the isolation of the content of social psychology, — the requirement had already been met, in spirit at least, by Jean Jacques Rousseau. In Rousseau, to whom French naturalism owes its main impulse, we find two contrasted and in a sense opposing points of view, one positive and the other negative. These together tended to the segregation of a certain sort of material. These positions were, first, the positive "return to nature," which took the form of individualism in politics and education (in *The Social Contract*, and *Emile*), and, second, the theory of the "general will," which opened the way for a new collectivism, whenever its implications for social psychology should be brought out.

These positions of his predecessor might have led Comte into a truer view, and have brought about the establishing of a social psychology — a science of the "general will" — in the spirit of the motto "back to nature." But this, as we have seen, Comte did not realize.

Undoubtedly, however, there is a profounder reason for the immediate unfruitfulness of the work of Comte — and this is my justification for dwelling so long upon it. Pursuing the method employed above, we may still recognize the requirement that the science of mind follow the genetic stages of the individual's growth in self-consciousness. With this cue, we may say that it was impossible that a psychology of social collectivism could be established before a theory of psychic individualism had been fully worked out. The individual is, indeed, truly a social person from the start; but this he himself does not recognize until he has lived through a period of strenuous unreflective self-assertion. Moreover, even then this consciousness of his social place is not in itself the adequate impulse to the theoretical interest to explain it. So social psychology, which embodies just such an interest, must perforce await the development of individual psychology and then serve to supplement it. We are able to see this now, inasmuch as we are only now realizing the transition from the latter to the former; and it is for this reason, also, that we are able to see why it was that both in France and in England the repeated claim of collectivism, both social and political,

was negatived and outlawed. Hobbes must yield to Locke, Comte to Mill and Spencer; and only after these latter could Bagehot, and Stephen, and Tarde arise, if, indeed, the renewed collectivism was to have a psychological foundation worthy of the name. And it is equally true that it is only as we work out the genetic processes whereby the reflective social self of the individual justifies its right to succeed the individualistic, that we can expect to see how society can rationally hope to reconstitute itself as more than a group of competing individuals. For having begun this work later, psychology, notably in France and America, deserves praise. But it can succeed only as it maintains both the naturalistic spirit and the positivistic method of Comte.

German Positivism; Experimental Psychology. The establishing of laboratory psychology is usually and rightly accredited to the Germans; but it is not so usually seen that this work does not involve a new point of view. On the contrary, it is the culmination of the positivistic movement sketched above. It not only admits the place of mind as a part of nature, but it suggests the employment of the methods of physical and physiological science. It arose in Fechner's attempt to discover the law of connection between psychic and bodily events. Such a law once made out, research would be guided and also controlled by its recognition.

Apart from the fact that the attempt failed, so far as Fechner's investigation was concerned, the importance of the conception cannot be questioned. A later formula — that of psycho-physical parallelism — is indeed truer to the ideal of a working positivism, just from its negative and colorless character. But ignoring points of controversy, we may still say that many fruitful researches have been carried out in this field; and disabusing ourselves of too great optimism, we may still count laboratory work as a part of the heritage bequeathed to the twentieth century. No doubt we are to see fruitful formulations under the rule of which great discoveries are yet to be made. Together with the actual founder, Fechner, we should name Lotze as also a pioneer in experimental psychology, and Wundt as an effective builder upon their foundations. Other great names in this connection are those of Weber and Helmholtz.

VI. Prospects

In conclusion, it may be deemed proper to set forth the probable lines of development of psychological inquiry in the opening century.

In the first place, it is clear that both naturalism and positivism — spirit and method — are to survive in psychology, as in science generally. And for the reading of their future develop-

ment we may again appeal to the rule of individual development. Certain lines of probable advance may thus be discerned.

(1) The thought of the unity of social content is a great step toward the breaking-down of any associational or other "privately conducted" science. The psychology of the future will be social to the core; and its results, we surmise, will be revolutionary in logic, sociology, ethics, esthetics, and religion, — the disciplines which are built upon psychology.

(2) It follows that the position that the private psychic point of view is the only valid one is to grow more and more obsolete, among workers in this field. It will no longer be possible to claim that all truth about mind must be traced in some individual's consciousness, and that the laws of the science are to be those of observable psychic continuity alone. Psychic events are intertwined with physical and biological events, and their sequences involve objective as well as subjective terms. The two sciences which will for this reason be brought into vital relation with psychology are physiology and sociology.

The two lines of development just mentioned are guaranteed by the essentially social — and by corollary, unprivate — character of our higher reflective processes.

(3) The genetic point of view will be worked out in a method of research by which genetic science will take its place beside quantitative science: psychology will become largely genetic or functional. The method in the biological sciences brought in by the theory of evolution consists essentially in the tracing-out of genetic sequences; a thing is defined in terms of what it does and becomes and of what it arose from. The anatomy of structure is only a restricted and largely descriptive branch of general biology. So psychic processes are to be understood as phases of a continuous function; their meaning is in what they do or become and in what they arise from. The analysis of a cross-section of consciousness is either descriptive, and thus barren of further results, or it is hypothetical, and in so far possibly mythological. This is the essential defect, and the dilemma of a "structural" psychology.¹

The genetic movement is guaranteed by the current demand and need that the dualisms of partial reflection embodied in the older science be overcome. Only as a law of genetic development is realized can the postulates of self-consciousness at this period or that be justified. But the justification of one such set of postulates is, in each case, the abrogation of a former set, and the prophecy of a later set. The law of the whole series as such it is the

¹ It may be observed that even the association psychology was preferable to the modern attempts to reach a psychic atomism, and from these to construct the mental life; for the law of association deals with concrete actual units, and formulates real psychic happenings.

task of genetic science to establish. It is no longer possible to rest content with a science of body in one text-book and a science of mind in another text-book, each of which claims that no single text-book can be written from a point of view which explains the origin of the dualism of the two, and sets forth the goal at which the dualism is finally explained. Apart from private speculation, it is psychology alone which can solve this problem; since it is psychology alone in which the very movement itself by which the sciences are differentiated writes itself down as a form of reflection. The origin, the motives, the object, the goal of thought itself are just the content of psychology; psychology must become, therefore, more and more the interpretation and reinterpretation of the genetic movement of the entire thought-content.

(4) Involved in the two lines of progress just indicated, — the social and the genetic, — and also confirming our expectation regarding them, there will be a racial and comparative psychology. In racial evolution the human genetic series is objectively worked out; and in the animal world, treated by comparative psychology, the corresponding pre-human series is displayed. Here psychology will come into vital contact with ethnology, on the one hand, and with animal biology, on the other hand.

Thus described, the work of the nineteenth century in psychology has been indeed most important. It has established the science; it has set the direction of its future movement. It remains for the twentieth century to reach practical applications of its results, and to improve the methods and instruments of further discovery. The present outlook is that social psychology will be carried on in France and America, genetic psychology in England and America, experimental psychology in Germany and America.¹ And such an expression is only what may be put more explicitly in the form of the opinion that in no country is the outlook so bright for the science in all its branches as in the land of the Louisiana Purchase Exposition, of which this Congress of Arts and Science is the most interesting and perhaps the most remarkable part.

¹ In Italy the principal currents set toward pathological and physiological psychology.

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SECTION A — GENERAL PSYCHOLOGY



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(Hall 6, September 23, 3 p. m.)

CHAIRMAN: PROFESSOR JOSEPH ROYCE, Harvard University.

SPEAKERS: PROFESSOR HARALD HÖFFDING, University of Copenhagen.

PROFESSOR JAMES WARD, University of Cambridge, England.

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THE PRESENT STATE OF PSYCHOLOGY AND ITS RELATIONS TO THE NEIGHBORING SCIENCES

BY HARALD HÖFFDING

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I

TO-DAY we have arrived at the conviction, that though the great and complex totality, which we call reality, cannot be understood without more or less artificial isolation of elements and without an analytical investigation of the mutual relations of such elements, yet the elements, which our science so distinguishes, are not to be considered as the constituent elements of the reality itself. In other words: the conditions of knowledge and of existence are not the same. Our ways of understanding are not necessarily the ways nature follows in her production. This is the old fundamental thought of critical philosophy, which has slowly made its way, especially during the later years, not only among philosophers, but also among naturalists who have discussed the first principles of their science. Then the possibility appears of an irrational relation between thought and reality, — the possibility, that the analysis of thought cannot do justice to the great synthesis of reality. The validity of science does not suffer by this, because the analyses and distinctions, which we undertake in order to arrive at a scientific understanding, ought to be founded, point by point, in observations of the living and concrete reality.

In no domain of experience does this point stand out so clearly as in psychology. In the material world, the elements which we distinguish have their position in space, one outside another, though an interaction is supposed to exist between them. But such an external relation cannot be valid in the domain of mental life. Here, the single element is so woven into the whole, that its very character is determined by it, and the whole is here not to be considered as a mere product of the elements. In psychology, analysis and distinction have a more artificial character than in physical science. We have less right still to consider mental elements as absolute realities than to look at material atoms in this way. However, there is no other way to scientific understanding of mental life than analysis on the basis of observation and experiment. And at its first beginnings, as at its limits, mental life has a sporadic character, presents itself, at least apparently, as isolated sensations, so showing a great contrast to the character of totality and synthesis, which it has where it appears in full development and maturity. We have here an antinomy which is of great importance to all psychological research. We cannot explain life as a mere product of the elements distinguished by the analysis, neither as a product of the sporadic flashes, to which it seems to be reduced at its limits; and yet the elements, to which the analysis and the observation of limits conduct us, cannot but bear an inward relation to the concrete consciousness and its synthetic totality.

This antinomy has had a great influence on the development of psychology. It manifests itself especially in the struggle between the two great schools, the one founded by Hartley and Hume and continued in the association-psychology and the Herbartian school, the other founded by Leibnitz and Kant and continued in the idealistic school of Germany. The first school leads to a mental atomism, while the other maintains the synthetic character of mental life. I am not going to follow up the history of this struggle in its particulars. There is no psychologist, whose general standpoint and special views are not determined by his position as regards the relation between atomism and synthesis in the domain of mental life. There is a temptation to dogmatize on both sides. They may both consider their particular point of view as an absolute and all-embracing one.

There is a psychological atomism which looks at the elements of psychological analysis as absolute and real parts, mechanical composition of which produces the mental life. It forgets that the whole psychological problem begins anew in every mental atom. For as in physical science the atoms, which seemed to be absolute, turned out to be worlds apart, in the interior of which

movements take place and currents go on, so we are led to acknowledge that our simplest sensations are synthetic phenomena, concrete totalities, corresponding to more or less complex physiological process.

On the other hand, there is a dogmatism, which looks at mental life as an indivisible unity, perhaps a substantial unity, which defies all analysis. It forgets that mental life, as indeed all life, exists under a perpetual struggle against internal and external oppositions, and that even practical introspection discovers important points of difference, for instance, at every choosing between possibilities. Different dispositions and tendencies manifest themselves in consciousness. The points of difference, then, are not called forth by scientific observation and analysis, but they belong to life itself. As scientific analysis by its one-sidedness always forces us to return to the great synthesis of life, so, on the other hand, we are forced by the internal tension of life to acknowledge the reality of differences and oppositions and so far to verify the results of scientific analysis. Only what life has connected, can be analyzed by us; but this connection does not exclude differences between the elements of life.

In American literature the relation between analysis and synthesis in psychology has been energetically investigated by such eminent thinkers as William James and Hugo Münsterberg. I believe that the last-mentioned thinker has been led to assert a stronger contrast between psychology and life than it is possible to maintain. It is always life which gives to psychology its materials, and introspection does not begin in scientific analysis, but is a practical necessity which presupposes the existence of points of real difference within the totality of life.

The contrast between analysis and synthesis in the domain of psychology has to a certain point an affinity with the contrast between intellectualism and voluntarism. In the domain of sensations and ideas the distinction between elements can be made with the least difficulty. It is the most articulated side of mental life, and at the same time the side which is most open to observation and experiment. The life of emotion and will shows a greater concentration, and the synthetical character here shows itself more clearly. The over-valuing of the results of the analytical method very naturally leads to undervalue the importance of emotional and volitional life, and even, perhaps, to look at emotions and will as mere resultants of sensations and ideas. But it is impossible to deduce the mental concentration from the interaction of absolute elements, and the whole direction of the development of sensations and ideas is determined by the interests, values, and aims, which have their foundation and find their expression in emotional and

volitional life. The voluntarism, which was founded by Fichte and Schopenhauer and has an important support in the biological theory of the struggle for life, is more and more considered as the main point of view in psychology.

II

Both the incommensurability between analysis and synthesis, and the superiority of voluntarism compared with intellectualism ought to diminish the propensity to close once for all the conception of personality, as theology and speculative philosophy have often tried to do. Positivism and empirical philosophy are often accused of abnegating the conception of personality, and in our time the historical view and the theory of liberty are often contrasted with empirical psychology. But even the empirical, experimental, and analytic school of psychology presupposes an energetic and earnest recognition of the reality of personal life. This school is founded on the conviction that the value of mental life is not to be diminished by being bound to certain conditions and subjected to certain laws. It studies then, with confidence, mental life in all ways which are open to science.

The difference between the psychological schools depends on where the problem is found, and how the burden of proof is distributed. Is the riddle of psychology how unity and continuity in mind are possible, or does the riddle arise when consciousness appears in a sporadic manner, in isolated flashes? That is the main question. But it branches out into many particular questions. The task of the synthetic school is to find the special forms of unity and continuity, which cannot be deduced *a priori*, and then to explain how it is possible that mental life in certain cases can have a sporadic character. The task of the other school is to describe the particular forms and degrees of isolation, and then to explain how there can be unity and continuity in mental life. Every school of psychology ought to admit that so long as mental life persists, a perpetual struggle is going on between the synthetic and the sporadic tendencies. When the character of unity prevails, the problem is, whether this unity is a mechanical aggregate, or whether it has a deeper foundation.

Pathological psychology seems to me decidedly to prove the truth of the synthetic conception. Without continual mental labor the "psychological tension" (to use the expression of M. Pierre Janet) cannot be sustained, and in mental disease this tension, without which consciousness cannot unite within itself a varied content of different elements, can only be maintained with a great and painful effort; very strong influences are then necessary, if

division or slackness are not to be the results. Isolated and sporadic phenomena are always setting mental energy a task.

The conception of mental energy can, as all conceptions of energy, only be defined by the labor which is performed, the resistance which is conquered. There is so much more mental labor to be performed, the more elements or tendencies there are that have to be united in the same mental state, the more different these elements or tendencies are, the stronger each of them is, the more intimately they are to be united, and the more remote in time they are from one another and from the present moment. It is true that in the individual cases it will be a matter of no little difficulty to apply that concept of psychical energy, whose possibility does here appear. The five factors of psychical energy can only be determined by careful observation and all-sided knowledge of the special historical and individual conditions in each single case. The number of elements or tendencies, the degree of their difference, the intensity of each one of them, the intimacy of their connection, the degrees of their distance in time, all this it is difficult to point out with certainty, and it varies from case to case. And to all this is yet to be added the velocity with which the mental functions of synthesis is to be performed. We have not here such simple factors as mass and velocity, by which physical energy is determined.

An inexhaustible wealth of possibilities is conditioned by the very different ways and degrees in which these five separate circumstances may appear. There is here a great field for observation, experiment, and comparison. The comparative psychology of individuality is as yet in an elementary state. Only in the domain of psychology of religion, especially here in America, a movement has begun in this direction. But no theory can ever give an exhaustive description of the manner in which the different elements or tendencies work together in any single state of a single individual. Here, as everywhere, the perfect individualization is to be attained by art, not by science. Art only can give a synthesis, which in some measure can do justice to the great synthesis of life.

III

New problems arise when we try to characterize the relation of psychology to its neighboring sciences. Psychology has a special relation, on one side to physical, and on the other side to historical and ethical science. And the relation can be shortly said to be that in comparison with physical science psychology has a decidedly synthetic character, but in comparison with historical and ethical science a decidedly analytical character. By these contrasts the problems which arise at the limits of the different sciences are determined.

I have already mentioned that the simplest mental elements which we can distinguish correspond to very complex physiological processes. What psychologically appears quite simple is a physiological multiplicity. In a simple mental element must be combined what physiologically covers several moments and a whole region of the brain. But there is also another thing which is of importance here. Mental elements are qualitatively different one from another, while we have reason to believe that the correspondent processes in the brain are only different as regards intensity, direction, and combination. What psychologically appears as differences of quality is from the point of view of physical science to be regarded as differences of quantity. Continuity, then, is more easily demonstrated from the physical than from the psychological point of view. The old maxim that nature does not move in bounds cannot be carried out in psychology as entirely as in physical science.

From these circumstances some thinkers have concluded that a science treating of mental life is only possible, if for the relation between mental states we can substitute the relation between the corresponding states of the brain. In order to be a science, psychology must be transformed into physiology. If not, it should, according to these philosophers, be impossible to approach the ideal of scientific understanding, *i. e.*, the pointing-out of continuity and equivalence between phenomena. But we always begin by discovering causal relations between qualitatively different phenomena, and not till later on can we take up the task of substituting for this elementary causality a more perfect causal relation with continuity and equivalence between the phenomena. Though in the domain of psychology we are scarcely able to go further than to the elementary causality, because we have no mental units and so no thorough quantitative methods, yet this fact does not exclude the right to admit a causal relation between mental states. And this is not only a right, but also a necessity. If there exists a causal relation between the correspondent processes of the brain, there must also be at least an indirect causal relation between the mental states. Moreover, we have only quite schematical constructions of the corresponding processes of the brain, constructions which are based on analogy with the directly observed and analyzed mental states. From these states we draw our conclusions as to the corresponding processes of the brain. This conclusion cannot be true, if psychological observations and analysis are not correct. The independence of psychology is thus presupposed.

Perhaps the simplicity and the qualitative character of the mental elements are to be regarded as the results of a hidden synthesis, so that if we could penetrate more deeply into the sphere of mental differentials, for instance, to differentials of the second or

the third order, the whole problem would stand in a clearer light to us. But we should always here meet at last the great problem of the relation of mind and matter. Here, also, the contrast between analysis and synthesis becomes important. The difference which can be established between mind and matter is due to analysis, to a distinction of elements, which in reality exist in connection with one another. We break the real totality, and afterwards we are astonished, because it is difficult to unite the parts into which we have divided it. This point has been very well cleared up by Wilhelm Wundt and Roberto Ardigo. The reality is always the great fundamental synthesis, within which we move with all our abstractions and analyses. It is a full unbroken melody, compared with our laborious spelling. But there is no other way to knowledge than the one which begins with analyzing. Our attention proceeds from point to point, and only later on it tries to unite its single results. And as little as we ought to ascribe absolute validity to our distinctions, as little ought we to regard it as fortuitous that our seeking after knowledge necessitates just these special distinctions. It is one of the characteristics of reality that it can only be comprehended by careful analysis of its contents.

I am not here going to discuss the hypotheses of the relation of mind and brain. I shall only say that as the physiology of the processes of the brain do not depend on other methods or points of view than those of physical science in general, the duty of proving is incumbent upon him who maintains an encroachment of the mind on the physiological processes. Such a supposition would do away with the independence of physiology. But there is no reason to deviate from the principle which physical science has followed for centuries, and to which all its triumphs are due, namely, that material phenomena are to be explained by material causes. Even to-day the dictum of Spinoza is valid: "When men say that this or that action of the body springs from the mind, they do not know what they say, and they do nothing but confess that they know nothing about the cause of the action." The only working hypothesis which makes possible a coöperation between physiology and psychology without any encroachment from either side, regards the relation of mind and matter as a functional relation, in the mathematical sense of the word, and tries to find as much continuity within both series of phenomena as possible. A concluding metaphysical interpretation is still an open question, but psychology as such has nothing to do with it. The parallelism, or, as I prefer to call it, the hypothesis of identity, has mostly been assailed as a metaphysical hypothesis. But it is first of all a working hypothesis, and the only one which can be followed up in all its consequences in the present state of science. And as I have said of our

analyses and of our distinctions, so I now say of our working hypotheses: we have no right to regard it as a mere accident that the world can only be exactly known if we apply just these working hypotheses. A system of metaphysics which would construct a view of the world without any regard to the working hypotheses which have been necessary, would be of no philosophical value.

IV

As psychology is synthetical as compared with physical science, so it is analytical as compared with historical and ethical science. Historical science treats on human works, ethical science on human ideals, but psychology treats on the elements and on the general laws of mental life. The relation of psychology to historical and ethical science is dependent on the relation between elements and works and ideals. There are here three lines of thought which may develop side by side. They all draw from the same deep source: from the immediate and spontaneous mental life, the real and concrete life, which no analysis can exhaust, and which can never be expressed completely in any work or any ideal, as little as in any sum of elements. All research has here as its subject the infinitely concrete totality and tries from different points to describe its nature and to express its fullness in definite forms. But the tones of life are so manifold and lie so closely together, that no scientific notation can express them completely. This is as true with regard to historical and ethical science as with regard to mental science. But within this identical position there is an interaction between mental, historical, and ethical science. If we want to find out the elements and laws of mental life it is not enough to study the single individual in its special states. A study is also required of human works and ideals, in which the nature of mental life is revealed throughout the ages. There exists no mental life in general. It appears in different forms at different times and places, and it strives to develop itself as fully as possible in every one of these forms, though the totality of its elements has a different timbre in every special case. Here psychology has a larger amount of material for its analysis. The sociological method in psychology works side by side with the introspective, the experimental, and the physiological methods. Mental science has a more abstract character than historical and ethical science, because elements are more abstract than works and ideals. Psychology here ought to apply the inversely deductive method, as it was already applied by Comte and described by Stuart Mill.

The first step is to point out the process which has led to the rise of a work or of an ideal; the second is to deduce and explain

this process from general laws of the interaction of mental elements. By pure deduction no results can here be arrived at. Reduction, not deduction, is what we can use. This is not only the relation of psychology to the historical and ethical sciences, but also to art — to the art of education, to the fine arts, and to the great art of ethical life. We cannot deduce pedagogics, esthetics, and practical ethics from psychology. But we can observe the spontaneous development of the art of education, of esthetic production and of ethical life, and the ideals and points of view which are revealed in this development may be understood by the help of general psychological laws. And this is after all also the relation of psychology to the theory of knowledge and to the philosophy of religion. It has to show the psychological possibility of the forms of thought which are presupposed in scientific knowledge. And it has to analyze the mental experiences of religious life. As to this last point I have expressed myself in the following manner in my *Philosophy of Religion*: "In Religion men have made some of their deepest and most intensive mental experiences. If religion is genuine and original, all the elements of mental life are at work in it with an energy and interplay not to be found in any other domain. The study of religious life is therefore of great importance to general psychology." Lastly, a reciprocal relation will more and more establish itself here, so that the understanding of mental elements and of the laws of their activity will be able to guide and clear up the work in the special domains. Indeed the history of these domains show that directly or indirectly such an influence has always manifested itself. If psychology is to have a future, this influence will be still more important than it has hitherto been. Psychology stands in a great debt to its neighboring sciences, and to the different kinds of art. Let us hope that it may be able to pay a part of the debt, though this debt ought always to be contracted again, if psychology, as well as the other sciences, is to progress!

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THE PRESENT PROBLEMS OF GENERAL PSYCHOLOGY

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"THE psychology of our day needs reforming from its very foundations," said Professor Lipps not very long ago; and, indeed, proposals for its radical reconstruction are being offered us on every side. Psychology must be thoroughly atomistic and structural, says one: it should be altogether functional, says another. For some it is the central philosophical discipline; for others it is but a department of biology. According to one view, it is merely a descriptive science; according to another, it is explanatory as well. Plainly, then, one of the present problems of psychology is the definition of psychology itself. Yet even this has been denied. "It is preposterous at present to define psychology," says a recent critic of such an attempt on my part, "preposterous to define psychology, save as Bleck long ago defined philology: *es ist was es wird*. It is in a process of rapid development. It has so many lines and departments that if it could be correctly described to-day, all the definitions might be outgrown to-morrow." There may be a grain of truth in this somewhat extravagant contention. *Ehe es einen guten Wein giebt, muss der Most sich erst toll gebärden*, it has been said. But surely, if we could define what is common ground for us all to-day, we might leave to-morrow to take care of itself. This common ground we call "General Psychology," and the assumption upon which, I take it, we are here proceeding is that the concepts of this general psychology are presupposed in the many special departments which we speak of as experimental (or physiological), comparative, pathological, etc.; and further, that these concepts will be presupposed in whatever new developments of the science the future may have in store.

To ascertain, describe, and analyze the invariable factors of psychical life, consciousness, or immediate experience is, — it will, I presume, be agreed, — the main concern of general psychology. "I find myself in a certain situation, which affects me pleasantly or painfully, so that in the one case I strive to prolong the situation, and in the other to escape from it." So in ordinary language we might any of us describe a moment of our own experience. How much of this is essential? If we are to leave any place for

genetic or comparative psychology, it is said, we must answer: What is found as distinct from the finding, in other words, a self or subject cognitively and conatively related to an objective situation in which it is interested. Such subject, we should say, was conscious, but not self-conscious. In order to find myself feeling, in order to *know* that I feel, I must feel. But I may feel without knowing that I feel. In order to know that I am, I must be, but I may be without having any knowledge of that fact. In short, the advance to self-consciousness is said to presuppose mere consciousness. Here, then, the irreducible minimum is the functional relation of subject and object just mentioned, a duality in which the subject knows, feels, and acts, and the object is known and reacted to. But at this *lower* level of experience, at which the subject's functions are not immediately known, have we not a relation with only one term? And that is surely a contradiction. At the higher level, where consciousness of self is present, — where, that is to say, the subject and its functions are known, — we have, indeed, two terms, but both are then objective, for self as known is certainly objective. We have two terms now, but so far the essential distinction of subject and object can no longer be maintained. So far as *both* terms are known or objective, the distinction lapses, it is allowed; but even in self-consciousness the "I knowing" — Kant's pure Ego — is still distinct from "the Me known" — Kant's empirical or phenomenal Ego. Very good, but then, in that case, it is rejoined, we are back at the original difficulty. You talk of this duality of experience, but it is still, it seems, at bottom a duality with only one known term. At the best, your pure Ego or subject is a metaphysical notion of a soul, or something that lies hopelessly beyond any immediate verification.

Now this disjunction, either *in* consciousness, *i. e.*, "content of consciousness," and then objective, phenomenal, presentational, ultimately sensational; or *out of* consciousness, and then metempirical, hypothetical, and unverifiable, — this disjunction, I say, constitutes a difficult problem, which at the present time demands the most thoroughgoing discussion. But instead of thinking-out the problem, psychologists seem nowadays content for the most part to accept this disjunction. Some, whom we may call "objective" psychologists, also known as "presentationists," confining themselves, as they suppose, to what is empirically "given," — to whom "given" and how received, they do not ask, — regard the facts of experience as a sort of atomic aggregate completely dominated by certain quasi-mechanical laws. In conformity to these laws, — laws, that is, of fusion, complication, association, inhibition, and the like, — the elements of the so-called "contents of consciousness" differentiate and organize themselves; and what

we call the duality of subjective and objective factors is the result. The Herbartian psychology, if we leave its metaphysical assumptions aside, as we well may, is still the classic example of this type. This is the psychology which most easily falls into line with physiology, and is apt in consequence to have a materialistic bias. Another school, which we may call "subjectivist," or perhaps "idealist," recognizes indeed the necessity of a subject *from the outset* whenever we talk of experience, but recognizes it, not because the actual existence of this subject is part of the facts, but because psychical phenomena, it is said, are unthinkable without a substratum to sustain their unity. This is the psychology that still — notwithstanding the brave words of Lange — cannot get on without a soul. I call it "idealist," because it tends to treat *all* the facts of immediate experience as subjective modifications, after the fashion of Descartes, Locke, and Berkeley. The hopeless *impasse*, into which the problem of external perception leads from this standpoint, is a sufficient condemnation of subjective idealism. Further, — and this I take to be the main lesson of Kant's "Refutation of Idealism," — such bare unity of the subject will not suffice to explain the unity of experience. In a chaos of presentations, without orderly sequence or constancy, we might assume a substantial unity of subject; but it would be of little avail, as the facts of mental pathology amply show. Returning now to the presentationist standpoint, — the one obvious objection to that is its incompleteness. As I have elsewhere said,¹ it may be adequate to nine tenths of the facts, or — better perhaps — to nine tenths of each fact, but it cannot either effectively clear itself of, or satisfactorily explain, the remaining tenth. No one has yet succeeded in bringing all the facts of consciousness, as Professor James thinks we may, under the simple rubric: "Thought goes on." Impersonal, unowned experience, a mere *Cogitatur*, is even more of a contradiction than the mere *Cogito* of Descartes.

But of late there have been attempts to mediate between these antitheses, so that, to use Hegelian phraseology, their seeming contradiction may be *aufgehoben*. Noteworthy among such attempts is the so-called "actuality theory" of Wundt, already more or less foreshadowed by Lotze. There is, I fear, a certain vagueness in Wundt's view, due perhaps to his general policy of non-committal; at any rate, I am not sure that I understand him. I prefer, therefore, to suggest what seems to me the true line of mediation in my own way. A relation in which only one term is known, it is said, is a contradiction. Yes, for knowledge it certainly is. But the objection only has force if we confound experience with knowledge, as the term "consciousness" makes us only too ready to do. If, however,

¹ *Modern Psychology, Mind*, [N. S.] vol. II, p. 80.

experience be the wider term, then knowledge must fall within experience and experience extend beyond knowledge. Now we may perhaps venture, without fear of metaphysical cavil, to maintain that being is logically a more fundamental concept than knowing. Thus, I am not left merely to infer my own being from my knowing, in the fashion of Descartes's "*Cogito, ergo sum.*" Nor would I even say that the being supposed to be known, the object is in fact only inferred, as Descartes was driven to suppose. Objective reality is immediately "given" or immediately there, not inferred. But now I am not going on to say that the subjective reality also is immediately given, is immediately there, as Hamilton and others have done. There is no such parallelism between the two: that would not end our quest, but only throw us back. *Es giebt*, you say: yes, but to whom given: *cui bono?* The dative relation is not a commutable one. The subjective factor in experience, then, is not *datum*, but *recipiens*: it is not "there," but "here," whereto "there" is relative.

And now this receptivity is no mere passivity. It is time to discard the ancient but inappropriate metaphor of the *stylus* and *tabula rasa*. The concept of pure passivity or inertia is a convenient analytical fiction in physics, but we find no such reality in concrete experience. Even receptivity is activity, and though it is often non-voluntary, it is never indifferent. In other words, not mere receptivity, but conative or selective activity, is the essence of subjective reality; and to this, known or objective reality is the essential counterpart. Experience is just the interaction of these two factors, and this duality is a real relation, antecedent to, but never completely covered by, the reflective knowledge we come to attain concerning it. It cannot be resolved either into mere subjective immanence, nor into mere objective position. The identification of its two terms equally with their separation altogether transcends experience; their identification is sometimes said to lead to the Absolute, and their separation, we may safely say, leads to the absurd. A subject *per se* and an object *per se* are alike not so much unknowable as actually unreal. A psychical substance, to which experience is only incidental, is an abstract possibility of which psychology can make no use; but for every experience an actual subject to which it pertains is essential, so surely as experience connotes presentation and feeling and impulse. If we are to be in downright earnest with the notion of substance, we shall probably find that Spinoza was right, and there is only one. But though we stop short of regarding the subject of experience as a substance, it is, I think, a mistake to speak of it as a phenomenon. If the actual subject of experience is to be a phenomenon, it must be such for some other experience; and one experience may, of course,

have phenomenal relations to another. But as I cannot be my own shadow, so there is a like inconvenience — as Kant humorously put it — in my being wholly the subject and yet solely the object in my own experience. Just as little as we can identify centre and circumference, organism and environment, because the one implies the other; just so little can subject and object be identified, because the one implies the other. The real contradiction, then, lies not in accepting, but in denying, this dual relation, one term of which is *being* subject, and the other a certain continuity of *known* object. For psychology the being of this subject means simply its actual knowing, feeling, and striving as an Ego or Self confronted by a counterpart non-Ego or not-self: the two constituting a universe of experience, in which, as Leibnitz held, activity is the fundamental fact, — *am Anfang war die That*.

But this subjective activity itself furnishes us with another problem, and one of the acutest at the present time. Bradley some years ago went so far as to call the existing confusion concerning this topic the scandal of psychology. Quite recently, however, views have been propounded that make the old confusion worse confounded. One distinguished psychologist,¹ whilst seemingly accepting entirely an analysis of experience such as I have just endeavored to sketch and admitting its validity within the moral sciences, or *Geisteswissenschaften*, as he terms them, nevertheless regards subjective activity as lying altogether beyond the purview of psychology, because it can neither be described nor explained. Another,² starting from a diametrically opposite standpoint, finds subjective activity, or psychical energy, essential to the explanation of any and every experience, but finds it actually experienced in none. According to his view, it belongs entirely to the unconscious processes underlying the contents of consciousness or experience: in these contents as such there is no working factor, but only the symptoms or phenomenal accompaniments of one. A "*feeling of activity*," he allows, has place within those contents; but it is only a feeling, it is not activity. A necessity of thought, he holds, constrains us to affirm the existence of real psychical activity, power, or energy; though we never actually experience it, because it resides ultimately in the "*world-ground*," and how experience proceeds from this is ineffable (*unsagbar*). Yet a third psychologist thinks that he has disposed of subjective activity by maintaining that introspection discovers no causal laws. In agreement with the first author mentioned, and in opposition to the second, he regards all psychological connections as really psycho-physical. Efficaciousness, as he calls it,

¹ Münsterberg, in his *Grundzüge der Psychologie*, pp. 77 ff. 1900.

² G. T. Lipps, *Leitfaden der Psychologie*, pp. 51 ff. 1903; *Psychische Vorgänge und psychische Causalität*, *Zeitschrift f. Psychologie*, xxv, pp. 15 ff. 1901. Lipps distinguishes between *Kraft* and *Energie*.

he derides as a "mere bauble." The vitally important thing in experience is a certain teleological quality or significance which the talk about "capacity to accomplish the causal production of deeds" does but obscure. Self-activity he proposes to regard "from the purely psychological point of view," as the conscious aspect or accompaniment of a collection of tendencies of the type which Loeb has called "tropisms," or movements "determined by the nature of the stimulus and of the organism."¹ In brief, we have in three recent writers of mark three conflicting positions: (1) Subject activity is a fact of experience, but psychology cannot deal with it, because it is neither describable nor explicable. (2) Subject activity is not a fact of experience, but it is a transcendent reality without which psychology would be impossible. (3) Subject activity is neither phenomenal nor real: the apparent "originality" or "spontaneity" of the individual mind is, for psychology at any rate, but the biologist's "tropisms."

I cannot attempt fully to discuss these views here, but I trust I have described them sufficiently to show that the scandal of which Bradley complained is still a stumbling-block in the way of psychological advance. On one or two remarks I will, however, venture. In the first place, these authors seem entirely to ignore the distinction between immanent action, or doing, and transcendent action, or effectuating: the former directly implies an agent only, the latter a patient also. Nor do these authors appear to distinguish between the so-called logical principle of causation, or natural uniformity, and the bare notion of cause, *Ursache*, as active. They must of course be well aware that these distinctions exist; and we are therefore left to conclude that they regard them as invalid; for otherwise these distinctions have surely an important bearing on the problem before us. The so-called logical — I should prefer to say epistemological — principle of causal connection has two forms: (1) Given a certain complex of conditions *A*, then a certain event *B* must follow, as we say in the more empirical sciences; and (2) the cause is quantitatively equivalent to the effect, as we say in dynamics. Into neither of these does the notion of activity enter at all: the inductive sciences find no place for it and the exact sciences have no need of it. "Causation," as one of these writers says, "'marries only universals' . . . and universals conceived as the *common* objects of the experience of many."² On this point they seem to be all agreed, and we also shall probably assent. Very good; but if so, they argue, must you not admit that this causation has no place in individual experience? Granted, but then comes the question:

¹ J. Royce, *Outlines of Psychology*, pp. x, ff.; Review of Stout's *Analytic Psychology, Mind*, [N. S.] vi, pp. 379 ff.

² Royce, *Mind*, l. c. p. 383.

Does the fact that I find no laws within my individual experience, but only a succession of unique events, *eo ipso* preclude me from experiencing immanent activity, and convict me of contradiction when I talk of myself as a real agent, or *Ursache*? Quite the contrary, as it seems to me: precisely because I am an individual agent, or Ego, with an equally individual counterpart, Non-Ego, is my experience unique: were it, in fact, from end to end but the outcome of universal laws or deducible from such, as the psychophysical theory implies, then certainly all efficient activity would be as absent from it as from other mere mechanisms. It is just this uniqueness and seeming contingency which defy mechanical explanations that conative activity explains. True, this activity is itself indescribable and inexplicable in other terms. But to say this is only to say that it is our immediate actual being, that we cannot get behind or beyond it, cannot set it away from us or project it.

To admit this *eigene Aktivität* as *das wirklich Wirksame, die zentrale Innerlichkeit* that for immediate experience leaves *kein unerklärter Rest*,¹ as the first of these writers does, and yet to eliminate it from psychology in order with the help of psycho-physics to convert psychology into a natural science, is surely a desperate procedure, the motives for which it is hard to conjecture. To turn *geistige Aktivität* out of the science, in order to separate it from the *Geisteswissenschaften*, is like giving a dog a bad name, taking away his character, in order to hang him.

With the views of the second writer I have personally much more sympathy. There is here no heroic inconsequence to bring psychology into line with mechanism at any cost; but a serious metaphysical problem, perhaps the most fundamental of all problems, that, namely, of the Absolute One and the Finite Many, seems to have biased him in the treatment of the problem before us. For the Finite Many he conceives that we are necessitated to postulate a transcendent "real" as *substratum*, and so they figure as phenomena, dominated and determined by the law of causality, and this in precisely the same sense, whether they are psychical or physical. For the Absolute One, the World-ground, however, there is no transcendent, no substratum; here the causal becomes the teleological, and we have pure actuality. The Absolute, in short, is a World-consciousness. But, if so, we naturally ask at once, must there not be a correspondence between this absolute consciousness and phenomenal consciousness which does not exist between it and the physical phenomena, over which the law of causality is supreme? Or, if there is no such correspondence, if what the author calls the *voluntarisch-teleologischer Standpunkt* has no place in finite experience, whence do we derive this concept

¹ Münsterberg, *op. cit.* p. 578.

of actuality, which in absolute purity is predicated of the One? I admit the utter disparity between the finite and the Infinite, but may there not be degrees of reality, and may not the continuity of these be infinite? Such degrees of reality our author recognizes. He says: "Je mehr Realität, d. h. je mehr Kraft, Reichthum und innere Einstimmigkeit das einzelne Individuum hat . . . desto mehr wird [es] von seiner Vereinzelung befreit. Es wird zu jenem 'überempirischen und überindividuellen.' Dies ist nicht ein 'Sich-verlieren' derselben in Welt-ich, sondern ein Finden des wahren oder positiven Ich in ihm."¹ If this progressive development is to mean anything, it surely must imply an experienced efficiency, and not merely a higher reality, of which there is no immediate experience, — which, in truth, is never "found." How there can be a finite actuality, which is yet not pure actuality; in other words, how I can be for myself more than phenomenon and yet not absolute reality, we cannot say. But our author, as I have already observed, acknowledges that even the procession of phenomena from the Absolute is *unsagbar*. But surely, if either way the problem of the One and the Many is insoluble, it is better to accept that alternative which does not seem in direct conflict with our actual experience.

The third writer, too, finds a justification for his position in philosophical views to which he refers as "elsewhere in part already set forth." I do not propose to follow him in search of these, but only to question the possibility of explaining the initiation of new forms of behavior by means of the biological doctrine of tropisms. This question leads us to a new problem. The idea of tropism is due, I believe, to the botanists. Certain plants flourish only in the full sunshine, others only in the deepest shade: the first the botanist would call positively, the second negatively, heliotropic. In like manner certain animals seek the light, while others shun it; and their behavior Loeb would describe in the same fashion, — that is to say, as due respectively to positive and negative heliotropisms: and, like some botanists, he looks solely to the physical and chemical properties of the several protoplasmic substances concerned to explain this difference. Instincts, again, are for him but complexes of tropisms; and so throughout. The striking diversities in the habitats and behavior of animals, equally with the like diversities among plants, he regards as resting at bottom on the physics of colloidal substances. A satisfactory development of this branch of physics Professor Loeb is expecting "in the near future." I very much doubt if there is a single physicist who shares his confidence, and shall be surprised if this physics of the near future does not prove to be that sort of hylozoism

¹ Lipps, *op. cit.* p. 343.

which Zöllner and Haeckel have championed, and which Kant long ago declared would be the death of natural philosophy, or physics proper. For hylozoism in so many words attributes to matter a certain sensibility incompatible with the absolute inertia essential to matter in the proper sense of the word. Such sensibility implies a psychical factor operative throughout organic life; whereas, if biology is to be reduced to physics in the strict sense, such a factor is then and there altogether excluded. Philanthropy and misanthropy, likes and dislikes of all sorts, everything we call conative, in short, will fall into line with other physical "polarities," or tropisms, and psychology and biology — so far from working together — must each give the other the lie. Either way, then, it is important to consider how far psychology can explain the bewildering variety of forms under which life now appears. Structure and function are undoubtedly correlative, but which is the determining factor? At one extreme we have the answer suggested by the conception of *ἑτελέχεια*, or formative principle, which we find in Aristotle, Leibnitz, Lamarck, and other vitalists; at the other we have the answer of Lucretius, Loeb, and the neo-Darwinians. According to the one, function is primary and determines structure; according to the other, structure is primary and determines function. In the first what I have called subjective selection, the selection of environment by the individual, would be important; in the other, natural selection and "the physics of colloidal substances" would be everything. For the one, subjective initiative will be real and effective; for the other, it will be illusory and impotent. Among ourselves subjective selection shows itself in the choice of a career, and in the acquisition of the special knowledge and skill which entitle a man to be called an expert, or a *connoisseur*. It would surely be regarded as extravagant to maintain that human proficiencies in all their manifold variety were the outcome solely of physical conditions and natural selection, and that they were altogether independent of subjective initiative and perseverance. The spur of competition may be necessary to urge a man to seek new openings and to try new methods, but the enterprise and the inventiveness are due, none the less, to his spontaneity and originality. Now it seems to me reasonable to assume that the like holds in varying degree among lower forms of life, that here, too, it is through subjective selection that the poet's words are fulfilled:

"All nature's difference keeps all nature's peace."

So, and not by calling the one negatively, the other positively heliotropic, I would explain the fact that the owls and the moths, for example, are active by night, while the hawks and the butter-

flies are active by day. And similarly in innumerable other cases. No doubt plant life raises a difficulty. Here there is a diversity at least as great as that which we find in the animal world, and here again there is as striking a differentiation of special environment. Can we refer this to anything psychical or subjective, or must we here at last fall back solely on "fortuitous" variation of structure and natural selection? This is a perplexing and in some ways a crucial question. On the whole, it seems safest to assume with Aristotle a certain continuity between life and mind, the psychical and the organic. Anyhow, the higher we ascend the scale of life, the more the concept of subjective initiative and adaptation forces itself upon us; and, till the chemical theory of life which Professor Loeb awaits is forthcoming, the principle of continuity forbids us to dogmatize as to the limits within which subjective selection is confined and beyond which tropisms take the place of conations.

Passing now from the subjective factor in experience to the objective factor, we are confronted by a new problem in the recrudescence of atomistic or sensationalist psychology that we find amongst us to-day. "Atomism in psychology must go wholly," it was said some twenty years ago by a writer much given to *dicta*. But atomism has not gone; on the contrary, in certain quarters it is advocated more strenuously than ever. It is easy to see the causes for this, but hard to justify it. These causes lie partly in the influence of analogy, partly in a natural tendency to imitate. The order of knowledge, it is said, is from *exteriora* to *interiora*, and accordingly the whole history of psychology and its entire terminology is full of analogies taken from the facts of the so-called external world. The ancient *species sensibiles*, the impressions of Locke and Hume, the adhesions, attractions, and affinities, in a word, the mental chemistry of Brown and Mill, are instances of this. Again, the tendency of the moral sciences to imitate the methods of the more advanced physical sciences is shown in the dominance of mathematical ideals from Descartes up to Kant, as in the *Ethics* of Spinoza, the theological demonstrations of Clarke, and the formalism of the Leibnitz-Wolffians. When a gifted mathematician and physicist in our own day, W. K. Clifford, turned his attention to the facts of mind, he at once broached a psychological atomism of the extremist type. It is, indeed, only natural that the wonderful grasp which the atomic theory has given of the physical world should have provoked anew the emulation of psychologists to proceed on similar lines. Moreover the structure of the brain — when superficially regarded as a congeries of isolated neurones — encourages a like attempt. And yet the moment we regard the brain functionally, — and not the brain merely,

but the whole organism, — the atomistic analogy fails us at once. Functionally regarded, the organism is from first to last a continuous whole; phylogenetically and ontogenetically it is gradually differentiated from a single cell, not compounded by the juxtaposition of several originally distinct cells. There is in this respect the closest correspondence between life and mind; one of the best things Herbert Spencer did was to trace this correspondence in detail. If a chemical theory of life is for the present improbable, a quasi-chemical theory of mind is more improbable still. The individual subject we must regard — so it seems to me — as *en rapport* with a certain objective continuum characterized by indefinite plasticity, or possibility of differentiation, retentiveness, and assimilation. The progress of experience, alike in the individual life and in the evolution of mind as a whole, may then be described as one of continuous differentiation or specialization; diffused and simple changes of situation giving place to restricted and complex ones, vague presentations to definite ones. But under all, the objective unity and continuity persists, and we never reach a mere aggregate or manifold of chaotic particulars, such as Kant assumed to start with.

Yes, but to describe experience as progressive differentiation and organization on more or less biological lines is mere natural history, the psychological atomist objects: it is only description, not explanation. But then psychology, or more exactly its subject-matter, individual experience, *is* historical; that is to say, though psychology is not biography but science, does not narrate but generalizes, yet its generalizations all relate to individual experience as such; and here what we may call the historical or biological categories — teleological categories, in other words — are surely supreme. It is remarkable how long the physical or atomistic bias has prevailed in human thought, but happily at length modern ideas of evolution have secured a juster recognition of the claims of the historical: I may refer in passing to the admirable philosophical expositions of these claims which we owe to Professors Windelband and Rickert. And surely it may be contended that an orderly and coherent account of the development of individual experience — one exhibiting its *rationale*, so to speak — is better entitled to be called explanatory than any theory can be that sets aside the essential features of experience as life in order to make room for the categories of mechanism and chemism, which are inadequate and inappropriate to the living world. As I have just said, such attempts are natural enough, but they are also naïve, and their inaptness becomes increasingly manifest as reflection and criticism deepen. At the outset men talk of thoughts as if they were isolated and independent existences, just as they

talk of things; nay, ideas are then but offprints or copies of things. Locke's "simple ideas," for example, are pretty much of this sort: as simple and single they come, and as such they are retained, save as they may be afterwards variously compounded and related. True, for Locke such compounding and relating was "the work of the mind," the result, that is to say, of subjective interest and initiative. But soon the inevitable further step was taken: the "compounding and relating" of these isolated and independent elements was transferred by Hume to certain "natural" processes, and then connected by Hartley with brain *vibratiuncles*; and thus the supremacy of psychological atomism was assured for a century or more. But it is the first step that costs, as the French say, and that is what we have to challenge. The disorderly, unrelated aggregate of simple sensations is a pure chimera, an *Unding*. If genetic and comparative psychology prove anything, they prove this. The earliest phases of experience are as little chaotic and fragmentary as are the earliest forms of life. In the so-called "contents of consciousness" at any moment, the psychologist may distinguish between field and focus, what is perceived and what is apperceived, and may allow that, as we descend in the scale of life, this distinction is less pronounced or even disappears altogether; but discontinuity he never reaches, either in the objective or in the subjective factor of experience. And when similar situations recur, the new is not ranged beside the old like beads on a thread, but the one is assimilated and the other further differentiated; and so there results a growing familiarity and facility, as long as such situations awaken interest at all. Presentations, in short, have none of the essential characteristics of atoms, they may come to signify things, but never to be them,—and the growing complexity of psychical life is only parodied by treating it as mental chemistry.

How, then, it may reasonably be asked, do I propose to account for the long predominance of associationism and for the recent revival of psychological atomism in a modified form? For instance, it has been said that the so-called "laws" of association are for psychology what the law of gravitation is for physics; surely they must be of substantial importance to make so extravagant a claim even possible? Yes; as I have allowed, they deal with nine tenths of the facts. A man at forty is a bundle of habits, we say; and a bee seems to be such a bundle from the first. Again, the poet exhorts us to rise on stepping-stones of our dead selves to higher things. Now it is solely in the wide region of already fixed, already organized experience that associationism finds its province. It can deal with so much of experience as is already grown, formed, and so far, in a sense, dead; with what has become reflex, "secondarily automatic,"

to use Hartley's phrase, *i. e.*, more or less mechanical. But here as little as elsewhere can the mechanical account for itself; these psychical "quasi-mechanisms" have to be made, and the process of making them is the essential part of psychical life. Presentations do not associate themselves in virtue of some inherent adhesiveness or attraction: it is not enough that they "occur together," as Bain and the rest of his school imply. They must be attended to together: it is only what subjective interest has integrated that is afterwards automatically reintegrated. Were association a purely passive process so far as the experient is concerned, it would be difficult to account for the diversities which exist in the organized experiences of creatures with the same general environment; but subjective selection explains this at once.

But the plasticity of the objective continuum, upon which this process of organizing experience depends, opens up a whole group of problems, which I may perhaps be permitted briefly to mention, though they may seem to belong to psycho-physics rather than to general psychology. How are we to conceive this plasticity? J. C. Scaliger is reported to have said that two things especially excited his curiosity, the cause of gravity and the cause of memory, meaning thereby, I take it, pretty much what we are here calling plasticity. Had Scaliger known what we now know about heredity, his curiosity would have been still more keenly excited. The facts of heredity have led biologists again and again to more or less hazy — but withal interesting — speculations concerning "organic memory," as Hering has called it; "organic memoranda" would perhaps be a better name. Memoranda, however, imply both the past and the future presence of mind, of experiencing subject, though they may exist as materialized records independently of past writer or future reader. Heredity treated on these lines commits us to a more or less poetical personification of nature; it is nature, the biologist supposes, which makes, and equally it is nature, he supposes, which uses these organic memoranda. The continuity of life — as the biologist is wont to regard it — renders such a view possible. *Omne vivum e vivo* is the formula of this continuity. But of any corresponding psychical continuity we not only know nothing, but what else we do know leads us to regard it as inconceivable. We have, then, continuity of life between parental and filial organisms, and yet complete discontinuity between parental and filial experiences. But is there after all complete discontinuity even between the two experiences? Yes, we incline to answer, the more we consider feeling, attention, initiative, the individualizing aspect of experience, or the higher and later phases of it in which these are most pronounced. No, we are tempted to answer, the more we consider the instinctive and inherited aptitudes which constitute most of what is objective in

the lowest forms of life, and the beginning of what is objective in all forms. May it not be said that we here come upon the problem of the One and the Many in a very concrete form, and that it is as intractable for psychology as is the more abstract, perhaps more legitimate form, in which it presents itself to metaphysics?

Simpler and less intractable is the somewhat cognate problem of subconsciousness. We hear of subconscious sensations as well as of subconscious memories or ideas: here I refer only to the latter. They are sometimes spoken of as traces or *residua*; sometimes as "dispositions," psychical or neural or both; the one term implying their actual persistence from the past, the other their potentiality as regards the future. The nature of this potentiality is what chiefly concerns us. Even here there must be something actual if we are to escape the absurdity of *puissances ou facultés nues*, with which in this very connection Leibnitz twitted Locke. Disposition is a somewhat ambiguous term. It means primarily an arrangement or collection, as when we talk of the disposition of stones in a mosaic or of troops in a battle. But it usually carries a second meaning, which, however, presupposes, and is consequential on, the first. Every actual combination entails a definite potentiality of some sort, and usually several, one or other of which will on a certain condition become actual. Sometimes this condition is something to be added, sometimes it is something to be taken away. A locomotive with the fire out has no tendency to move, but with "steam up" it is only hindered from moving by the closure of the throttle-valve or the grip of the brake. Now presentational dispositions may be assumed to be of this latter sort, to be, that is to say, processes or functions more or less "inhibited," the inhibition being determined by their relation to other presentational processes or functions. This, of course, is the Herbartian view. On this view the use of the term "subconscious" is justifiable, as long as the latency is relative and not absolute. But if we regard the so-called *disposita* merely structurally, if such an expression may be allowed, if, in other words, we suppose all functioning to be absent, then there seems no warrant for the term "subconscious," nor yet for such a phrase as "physiological disposition," meaning tendency, and still less for that of "psychical disposition" or tendency. But on the physiological side, at any rate, it seems reasonable to assume the persistence of a certain neural "tone" or activity: what is known as "skeletal tone" or muscular tonicity is indeed evidence of such persistence. Yet from the psychological side there comes the supposed fatal objection: it is surely incredible that all the incidents of a long life, and all the items of knowledge of a well-stored mind, that may possibly recur, are continuously presented in the form and order in which they were originally experienced or acquired. But no advocate of subcon-

sciousness has ever maintained anything so extravagant. Sub-consciousness implies what Leibnitz called involution, or the existence of what, taking a hint from Herbart, I have ventured to call the ideational tissue, or continuum. Though the explicit revival of what is retained is successional, recurs, so to say, in single file, yet a whole scheme, in which a thousand ideas are involved, may rise *towards* the threshold together; and, conversely, in the case, say, of a play which we have followed throughout, there is a like involution when at the end we express our opinion of it. It is a mistake, then, to suppose that all the impressions that have successively occupied our attention persist *item for item* in that *multum in parvo* apparatus which — with due reserve — we may call our ideational mechanism. But of their subconscious persistence as thus assimilated and elaborated there is, I think, abundant evidence. If such subconscious continuity be denied, we can accord to voluntary attention no more initiative in the revival and grouping of ideas than belonged to non-voluntary attention in the reception of the original impressions: the immediate determinants of both alike would be physical stimuli. And apparently — to judge by their terminology — some psychologists believe this to be the case.

This whole topic of the growth and development of reminiscence and ideation has been too much neglected, largely in consequence of the spurious simplicity of the atomistic psychology; particularly its crude doctrine that ideas are mere copies or traces of impressions, its adoption of a physiological hypothesis, now seriously discredited, viz., that the seat of ideas is the same as the seat of sensations, and its failure adequately to distinguish between assimilation and association, or to recognize the wide difference that exists between the processes which it describes as association through contiguity and association through similarity. We owe much, I think, in the treatment of this topic to Professor Höffding's article, *Ueber Wiederkennen, Association und psychische Aktivität*, especially to his distinction of "tied" and "free" ideas, a distinction, however, which I find Drobisch had previously drawn. I regret that there is no time left for further remarks on this problem.

Among other problems particularly deserving of consideration, I should like at least to mention the genesis of spatial and temporal perception; the whole psychology of language, analytic and genetic; psychical analysis, objects of a higher order, the so-called *Gestaltqualitäten*, — in a word, the psychology of intellection generally. All of these, including the topic of ideation previously mentioned, lead up to what might be termed epistemological psychology, the psychology, that is, of universal experience on its individualistic side. Perhaps other members of this Congress may see fit to broach one or other of these problems. But I confess that those on which I have

enlarged somewhat, the definition of psychology, the nature of subject activity, and the criticism of the atomistic theory, seem to me now fundamentally the most important. I wish I had been able to deal with them in a way less unworthy of my audience.

SPECIAL BOOKS OF REFERENCE

The following works, among many that might be mentioned, will probably suffice (along with those mentioned in the text) to place the interested reader *au courant* with the topic of this address.

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SECTION B — EXPERIMENTAL PSYCHOLOGY



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(Hall 2, September 23, 10 a. m.)

CHAIRMAN: PROFESSOR EDWARD A. PACE, Catholic University of America.
SPEAKERS: PROFESSOR ROBERT MACDOUGALL, New York University.
PROFESSOR EDWARD B. TITCHENER, Cornell University.
SECRETARY: DR. R. S. WOODWORTH, Columbia University.

THE RELATIONS OF EXPERIMENTAL PSYCHOLOGY TO OTHER BRANCHES OF SCIENCE

BY ROBERT MACDOUGALL

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In this paper it is my privilege to present briefly those aspects of the science which it seems important to keep in mind in characterizing the place and function of experimental psychology. I shall first point out the considerations which influenced me in the choice of that particular class of relations which has been selected for comment. A series of distinctions will next be made, defining the relation of psychology to philosophy, of experimental to theoretical psychology, and of physiological psychology to physiology. Thereafter will be taken up in succession the bearing of experimental psychology upon the normative and historical sciences; and the paper will close with a short consideration of its contribution to utilitarian science and the arts of practical life.

Classification of the sciences proceeds by a logical analysis of their functions in relation to certain general concepts. The form of the resulting arrangement depends upon the nature of the fundamental principle assumed; and as this determining point of view is a reflection of the thinker's purpose, which is not necessarily fixed by any set of objective conditions, the scheme which results must be called subjective. All classification, however, is in this sense subjective. Some regulative principle must be assumed, and the

question is really one as to the basis of selection among the various governing concepts which may be adopted. Such sources of preference of course exist. Not all logical schemes for the subdivision of a given set of phenomena are equally valuable; and the classifications which as a matter of fact we make are those which serve our practical or scientific purposes, not those whose appeal rests solely upon logical simplicity or completeness. The purely logical analysis of any subject-matter declines in importance as the range of phenomena with which it deals is amplified; and in every general classification of the sciences it will be found that while within certain of its component groups the arrangement appeals to the observer by the practical fitness of its affiliations, in regard to other parts of the field the correlation of elements seems to have been made with a view to logical completeness only, instead of reflecting those associations which are most interesting or most important for the scientist.

The reason for this inadequacy does not lie in any failure to carry out the divisions involved in the logical principle assumed, nor, indeed, in any lack of value in the governing concept itself. On the contrary, it arises from a deficiency which reappears as persistently in the relations in which we view the objects of our scientific activity as in those of our practical life. It is not our habit — except, indeed, when the problem of classification itself is in question — to carry a single logical principle continuously through the whole series of related activities in which our thought is expressed. Within a narrowly limited field a given principle may be of such dominating importance that the single system which results from its application is of both logical and practical value. But with every fresh extension a point is more nearly approached where it will be displaced in significance by some other concept; in which case the usefulness of the logical classification will be reduced in proportion as the set of relations prescribed by this fresh point of view acquires greater importance in the mind of the thinker.

This dualism must always be faced by the systematizer if his interest in the subject-matter be other than formal, and whose is not? All logic worth the name is instrumental, not final. The mental attitude which erects consistency into a principle of absolute value is branded as scholastic pedantry; for all rational interest in the logical relation of concepts roots somewhere in the desire to understand the historical connections of things. Classification is good only in so far as it helps us to group things according to their most important aspects. When it ceases to have this value, we turn to some other principle which in its turn has gained the ascendancy.

The logical systematization of any order of phenomena is thus supplemented and controlled by a consideration of the various classes of associated phenomena upon which in our thought we find ourselves most frequently and seriously depending. If the physiologist constantly refers to the work of the chemist, and finds the theorems of that science indispensable to the successful prosecution of his own investigations, the methods and subject-matter of the two disciplines must have common elements in theory as well as practice, and their relations cannot be overlooked in any scheme of classification which includes both sciences. For those, therefore, who have more than a formal interest in the matter there must always be profit in a study of the various special sciences with which in the actual progress of knowledge any given type of investigation is most frequently brought into contact. I shall therefore put aside as far as possible questions of purely logical import, and confine my attention to associations of the latter type.

Two orders of relationship are here presented. The first of these is the question of historical origin, the second that of functional interaction. The consideration of the series of historical developments out of which a given science has arisen, however, leads one to an importantly different set of associates from those with which its activities at the time being are most frequently and significantly allied. Psychology did not arise either by division or exclusion from physiology, yet the methods and results of that science are more frequently discussed and made use of by the psychologist than those of philosophy, from which his science has had its historical origin.

It is to relations of the second type, it may be assumed, that expectation chiefly turns in discussions concerning the place of any given science. These fall into two general classes according as they express relations of dependence or support. By their side both matters of logical classification and questions of origin are of secondary importance. One wishes to know of a science, as of a man, what it is doing in the world rather than its descent and family connections. A knowledge of the sciences to which it is indebted, — for points of view or for results, — and of those to which in its turn it contributes, will go farther toward affording an understanding of its place in the general system of knowledge than any amount of formal and antiquarian information regarding it.

Before taking up the discussion of these positive relations, however, it may be advisable to discriminate psychology from two adjacent branches of study with which its function has not infrequently been confounded. On the one hand, psychology has been

regarded as a form of philosophy, depending for its completeness upon metaphysical assumptions and not presenting the results of experimentally determined knowledge. On the other it has been charged that what we term psychology, though admittedly a science, is not a science of mind, but merely a branch of physiology. Like a person pulled in opposite directions by two companions, if we wrench ourselves free from the grasp of metaphysics on the right, the tug of physiology is in danger of drawing us bodily over to the left.

Every science in its progress has to face the awkward problem of its own descent. Its ancestors are on its hands. It has arisen from that which in many cases is not merely unlike, but essentially repugnant to its own true aims. Its methods have been debased by charlatanry, its imperfect rationalization of phenomena has been eked out by speculations subsequently discredited as absurd, and its aims have been distorted by an admixture of metaphysical concepts which hamper its progress and cast doubt upon its credentials as a science. Through these stages our knowledge of the configuration and motions of the earth, of the forms and adaptations of life, of the functions of man's will and the relation of human destiny to the processes of the suns has passed. Above all has psychology felt this hereditary incubus in the establishment of its methods upon an inductive basis.

In considering the claim of any system of thought to a place among the sciences, it must be remembered that its standing is not to be determined by the largeness of its results. That a science is an organized body of knowledge about a specific class of phenomena is a definition which none of us would willingly relinquish. It is to the system of truth which has resulted from its investigations that the world looks for evidence of the rise of a new science. But there is a more essential aspect to the matter than this. Such a system of knowledge, because progressive, is necessarily incomplete; and all discrimination between its successive stages is merely relative. It is a science in becoming, as well as in being. If it be worthy of the name at any time, it must in the deepest sense be a science at all times. So long as only the range of facts which it rationalizes is changed, and not its methods and point of view, the scientific character of its work must remain unaffected. The moment of its birth is the instant in which that mode of approach to a problem of knowledge which we call inductive method is first applied to its subject-matter. Only the subsequent body of knowledge which gathers about it may indeed be said to give substantial reality to the new science, since it alone gives continuity to the study. Yet when we are called upon to say of a given piece of work whether it is scientific or not our judg-

ment must hinge upon the consideration of method and method alone. If psychology adopts the assumptions and criteria of positivism, of which question is no longer made, its place is amongst the descriptive sciences, though the bulk of that organized body of knowledge in which the work of every science must result lies still *in futuro*.

In establishing its position as an inductive science, however, one has answered the question concerning the relation of psychology to philosophy in one of its bearings only. There still remains to be considered their mutual relations to the whole system of legitimate problems which human consciousness presents, and the validity of their respective methods in approaching them.

The early history of every science is confused by an admixture of fable and false interpretation. Wherever a gap in our knowledge exists, these airy fabrics are woven; whenever discovery throws its solid connections across the hiatus, they are brushed aside to be reconstructed elsewhere. These pseudo-explanations commonly employ the terms of speculative thought, and appeal to the realities with which the philosopher deals. In homologating philosophy with such a fringe of speculation its function is wholly misconstrued. Philosophy supplements science, but by no such process of interpolation. The hypothetical completion of the web of empirical knowledge, at which these fables aim, belongs essentially with the descriptive sciences, however wild its assumptions or fantastic the order which it imaginatively constructs. When the borders of science thus become confused through a failure to discern the absolute discontinuity of scientific explanation and philosophical interpretation, there arises a false hope that by patience in perfecting the methods of science and thoroughness in their application the whole range of problems which the world presents to our intelligence may progressively be solved. Finality is indeed inconceivable either in the nature of the specific problems to be solved or in the adaptation of method to their investigation. The limitation of the scientist at any time, however, is but the correlative of the stage which his analysis of phenomena has then reached, and is not due to any insufficiency of his method *per se*.

In consequence of this belief the position has been taken again and again in the intellectual history of the world that all reality is the object of positive knowledge and that naturalistic science is the single method of approach to every conceivable problem. Whatever justification this attitude had in relation to the function of physical science it possesses in an intensified form in estimating the part which a thorough experimental investigation of the phenomena of consciousness may be expected to play in the

solution of those general speculative problems which arise in our meditation upon the nature of consciousness and the world of knowledge. Once establish the conditions under which consciousness is manifested, by determining the special laws of mental functioning and tracing the course of its evolution, and the last stronghold of speculation will be taken. A scientific psychology will replace those philosophies of mind which, while seeking to make plain the nature of mental processes and their relation to the world at large, have but replaced real by fictitious problems, and darkened understanding thereby.

This expectation is necessarily unrealizable, not because of the mechanical difficulties of the work, — which may be insurmountable, — but because it is based upon a misconception of the scope of empirical psychology and of the relations which exist between its conclusions and those of metaphysical interpretation. Psychology we call a descriptive science because it is an analytic study of mental functions. The fullest possible account of mind from this point of view will still leave untouched the whole problem of an object of knowledge and of the origin of the order which appears within the content of consciousness. The advance of psychological science may legitimately entail a succession of philosophical reconstructions by rendering untenable the forms in which those most general relations of existence have hitherto been cast; but can never hope to supersede the function of either epistemology or metaphysics by supplying the conclusions toward which their analyses are directed. The break is as absolute as that between mind and matter. Nerve-physiology can never hope to discover consciousness, nor psychology to reach the region of metaphysics; not because any part or aspect of mental phenomena is excluded from the field of scientific investigation, but for the reason that there exists a problem to which the very nature of his assumptions precludes approach. This is the interpretation of the place and meaning of consciousness, together with the whole realm of phenomenal existence of which it forms a part, in the ultimate system of things which constitutes the universe of reality.

So long as the assumption which lies at the basis of all science — namely, the existence of an object of knowledge — continues, no condition is conceivable in which there will not be the same demand which exists to-day for an epistemological analysis of the foundations of knowledge and for a metaphysical interpretation of reality. The reduction of experience to a field which can be regarded from a single point of view can be accomplished only through ignoring the existence of the problem of knowledge. The process of consciousness must be treated as self-existent and subjected to a wholly internal analysis. Yet in the adoption of such

a subjectivistic point of view the metaphysical problem is not faced, but assumed to be non-existent, and with the elimination of philosophy vanishes also the validity of science through the denial of the fundamental assumption upon which the whole force of its appeal depends.

Within the field of descriptive psychology as thus defined we are apparently met by a division into two sub-provinces of theoretical and experimental science. The discrimination, however, is a false one, if two separable processes are conceived, or two independent systems of truth, however closely related. There is but one science of psychology, as there is but one physics and one biology. Every hypothesis in science must be susceptible of experimental verification, and the result of every test must either confirm or correct an hypothesis. Theoretical science is but the continuously elaborated structure which is rising on the basis of experimental method,—at once the inspiration and the product of inductive research. In the concrete process by which knowledge advances these are aspects of an activity which in its essence is single. It is only for didactic purposes that a logical analysis is made, whereby the results are presented in isolation from the complicated and difficult procedure through which they have been reached. All descriptive science is popularized science, a résumé of conclusions presented in abstraction from their premises, and in such a simplified form as may be grasped by minds which from lack of information or discipline are unfitted to make independent deduction of them. It is an indication of the undeveloped status of our science that alongside of its legitimate subdivision according to subject-matter there is also a division according to method, into general (or theoretical) and experimental psychology. The same general principles govern all research; the same criteria are employed in the validation of scientific results, irrespective of qualitative differences in their subject-matter; and the experimental method is the uniform approach of every science to its problems.

Experimental psychology has no special or independent class of phenomena to investigate by which it may be differentiated from psychology at large. It has therefore no place—as psychology itself has—in a classification of the sciences which proceeds upon the logical subdivision of the orders of reality and the connections which obtain among them. The relation of experimental psychology to the general science of mind is that of a method of investigation to the body of doctrine which results from the solution of the problems to which it offers a mode of approach. Wherever discriminable ranges of phenomena are treated, the investigation of each may be conceived independently. Thus the

habits of the adult mind and the processes of its earlier development, the types of mental action in the normal subject and their variations under conditions of disease, the phenomena of human consciousness and those of lower forms of life afford data for systems of knowledge which, while forming mutually assistive parts of one general science, are yet profitably regarded as separable groups of organized facts. But no such differentiation can legitimately be made between experimental and theoretical psychology. By virtue of its very demonstration, each fact becomes at once an element in the system of relations which theoretical psychology is constructing. Experimental psychology is thus a term which describes the whole process by which our knowledge of mental functions and relations is put upon an inductive basis. It connotes the transformation which has withdrawn psychology from affiliation with philosophy and has placed it among the natural sciences. It is by its very nature coextensive with the field of theoretical psychology, for the subject-matter is a continuum, and therefore admits of but one mode of approach.

The range of instances to which the experimental method has been applied, and the fruitfulness of its results in any given subclass of mental phenomena depend upon the special conditions under which these experiences arise; and the value of its contributions varies greatly from one group of psychoses to another. But the existence of these difficulties is a thing wholly mechanical and irrelevant. The entire field of psychology belongs to the psychologic experimentalist; and only when every part of systematic psychology has been put upon a substantial inductive basis shall we be in possession of a secure body of doctrine.

The functional relation which I have just indicated is subject to confusion through the rise of a group of loosely related appellations, each of which in turn has been employed to designate the field of experimental psychology. Psychometry, psycho-physics, mental physiology, physiological psychology, experimental psychology, and empirical psychology are terms whose proper applications differ so significantly as to make their discrimination indispensable.

In the present connection, however, we are concerned only with indicating the limits of physiological psychology, — a field indicated also by the illogical and unhappy term mental physiology. This term has not infrequently been used as a substitute for experimental psychology, and in untechnical speech is perhaps most in vogue for this purpose. Properly it is a much more restricted term; for the system of physiological changes which in some form or another is the uniform accompaniment of mental phenomena comes under consideration only here and there in the general course of psychological investigation. This series of events is indeed one

of the most important groups which the investigator has to examine in his systematic analysis of the physical conditions of consciousness; and an elaborate mass of literature has accumulated in regard to it. Nevertheless the relations embraced under physiological psychology form but a fragment of the whole set of problems with which the investigator is concerned. Nay, more, an experimental science of mind of no mean proportions might exist in the absence of all consideration or knowledge of that mediating series of events which we call physiological action.

Experimental psychology embraces within its field the whole system of conditions under which consciousness works, whether intensive or qualitative, whether physiological or mechanical, whether functional or formal, whether occasional or predisposing. By experimental psychology, therefore, we shall mean the systematic investigation by inductive methods of all the internal connections of mental action, whether characteristic or pre-determining; and all its external conditions, both proximate, or physiological, and remote, or physical.

In contrast to the assertion that psychology is philosophy, it has been charged that the work done under that name is really physiology, that the subject-matter is properly described not as mental phenomena, but as physical events, and that the laws discovered are those of change within the processes of the nervous system. The name is a misnomer, and all the physiological psychologists are physiologists who have been mislabeled.

It is true that there is much in common between the two fields of investigation. The experimental psychologist must in so many instances be familiar not only with the general truths of physiology, but also with the mechanics of physiological experimentation, if he is successfully to pursue his investigations, that a working knowledge of the latter science may fairly be called an indispensable element in his preparation. The strongest confirmation of this is perhaps to be found in the number of eminent names which are common to both sciences. Much work of the highest rank in psychology, and perhaps its largest bulk, has been done by those who were either still primarily concerned with physiology or had come to an interest in the psychological aspect of their investigations through an earlier interest in their physiological significance alone.

It is also true that in methods the two sciences have much in common. The same things are measured in the two cases, namely, nervous change, glandular activity, muscular contraction, and their time-relations. In the one case, however, these measurements are final, while in the other they are purely instrumental. The physiologist is interested in the immediate facts which the measurements reveal, in the modes of action, the interrelation of processes, and

the curves of variability which characterize the metabolism of the body. When these laws have been worked out, the physiologist's task is completed. His aim is to make known the whole system of functional modes associated with the physical structures which compose the living body.

But for the psychologist these facts have in themselves no value whatever. He should indeed be an eager student of the whole literature of physiological research because of the potential significance of each new fact which is there revealed. But in no one of these, however momentous its discovery be for the physiologist, is he concerned, except in so far as it throws light upon the special and independent problems with which he is engrossed. Hence the interest of the psychologist is distributed in a manner wholly unlike that of the physiologist among the series of physical phenomena which constitutes the latter's field of investigation. For it is only such parts of this system of physical changes as can be immediately or mediately connected with discriminable variations in the associated mental content that enter into the calculations of the psychologist; though it may be at once acknowledged that as every function is necessarily dependent upon some distinctive organic form, so presumably it is likewise correlated with a real change in the quality of consciousness, even though the specific relation of the two may as yet have escaped detection. The problem of the latter, therefore, in so far as it is to be discriminated from that of the physiologist, is the analysis of the whole system of correlations which exist between these measurable physical processes and the immediately realized succession of modifications which we know as the flow of conscious life.

The relation of psychology to physiology is not wholly one of dependence. That science provides much of the terminology in which the results of psychological investigation are expressed. Moreover the complicated system of relations which physiology has worked out forms an organized body of truths which not only affords the symbols into which the relations of mental phenomena are translated, but may also be used to direct the progress of investigation and to forecast the yet undetermined connections which exist among associated states of mind.

On the other hand it is likewise true that the knowledge of mental functions and their relations has similarly been employed in framing the representation of many physiological processes to which access is difficult or impossible, and in guiding the experimentalist in his researches concerning the functions of the central nervous system. In much of our brain physiology constructive theory is directed rather by an analysis of mental functions, — such as perception, speech, and memory, — than by observation of the physical pro-

cesses under discussion. Indeed it is not too much to say that, unlike the work of the anatomist, it is just this systematic knowledge which we possess, — knowledge of the functional complexes of the conscious life, — which gives form and rationality to the large but undigested mass of facts which physiological investigation has made known to us, — a fact which the psychologist as well as the physiologist is perhaps prone to forget.

We turn next to those departments of thought and life to which experimental psychology makes a direct and positive contribution; and first of ethics, esthetics and religion. The common use of the term "normative" in connection with this general group of sciences has been made the ground for urging a distinction in point of view between their fields of study and the descriptive sciences. The latter, it is said, treat their subject-matter as sheer phenomena and profess to note only the types and sequences which it presents. To consider or desire an alternative event is beyond their scope. The natural scientist deals historically with an irrevocable, because given, system of facts.

In the normative sciences, on the other hand, it is said, the fact is considered not in relation to an actual type, which is itself but a certain mean of the series of existing individuals, but in relation to an ideal type, or norm, toward which the fact is conceived as tending. It is the function of the normative sciences to determine these standards and to pass judgment upon each of the facts as it appears, appraising its worth in terms of its approach to these ideals and apportioning praise and blame accordingly. It may seem a gratuitous quibbling where such a real and practically important distinction exists as that here in question. Yet I cannot but think it necessary to protest against the terms in which this difference is stated, or, if the terms be not misused, to deny the validity of the distinction which is intended.

All science is descriptive science, with a common nomenclature as well as a single task. Its work is to determine the relations, both qualitative and causal, which exist among phenomena. It always describes what is, and seeks an explanation in terms of its historical antecedents. No science, it has already been said, can be logically subdivided into theoretical and experimental on the ground of differences in procedure. Neither can the existing group of sciences be subdivided in virtue of variations in the methods employed.

The real distinction between the normative and descriptive mental sciences lies in their subject-matter, and not in the manner in which it is treated. Both alike deal with a system of phenomena, and both seek to analyze the given facts for the purpose of determining their character and order. The student of ethics, instead of treating the content of human consciousness at large, studies only

those ideals, judgments, and acts which constitute moral life. His interest, it is a truism to say, is not in the history of each individual judgment, but in the relation of these judgments and acts to the ideal which coexists in the mind of their subject. It is the existence of these ideals, together with the sense of realization or failure, and its consequent emotion, which makes the science of ethics possible; and its task is first to determine the content of the ideal, and secondly to give an account of its historical evolution. With the completion of this analysis the work of the ethical student comes to an end. It is not true that he has a further or independent function, — such as the establishment of a criterion of moral values and the apportioning of praise and blame in connection with the conduct under consideration. A comparative study of the moral ideals which obtain among the various races of mankind is indeed within the limits of his task; but an estimate other than this, such as the ranking of ends as absolute ethical ideals, is not a scientific process, but either an individual moral act expressing personal convictions, or a metaphysical speculation as to the place of the various goods of life in an ultimate system of reality.

To these sciences, whose subject-matter is the various norms of human conscious life, experimental psychology contributes directly and largely. In a word, it gives intelligible order to the content and developmental history of the various ideals which govern the actions and judgments of man in matters of feeling, conduct, and faith. In the absence of such a psychological analysis, I cannot conceive how the sciences of ethics, esthetics, and religion could ever be put upon a sound basis. Without it the literature of these departments of thought would consist of a mass of dogmas which, while susceptible of psychological rationalization, must present to the philosopher a series of contradictions irreconcilable with his fundamental assumptions. Under the concept of a descriptive science this *impasse* is avoided, since the various ideals are then treated simply as historical phenomena, and divergence of type involves no contradiction, but indicates only variety of nature and environmental conditions.

Experimental study has both given an historical content to the forms of moral law and brought about a rearrangement in our judgments of human action; and an analogous reconstruction has taken place in regard to religious experience. It follows that if we relinquish the concept of unconditional responsibility and supplement the principle of the moral will by a recognition of the significance of the system of external conditions under which it finds manifestation, our whole conception of the nature of ethical and religious development, and of crime, wrong, and sin, will thereby be affected; while educational, therapeutic, and preventive measures

will be modified in accordance with the nature of the influence which these factors have exerted. This change of view is represented in the recognition among dependents and criminals of an aberrant physical type. It is represented in the sliding scale of condemnation attaching to the same fault under different conditions and by different individuals. It is represented in the substitution of the concept of an orderly and explicable process in the religious development of the individual and of humanity for that of the miraculous and inscrutable working of a divine spirit. The experimental study of the relations of consciousness to its environing conditions has removed these provinces of action and judgment from the region of mysticism and supernaturalism, and made them part of the unitary system of forces which finds expression in the orderly development of the human life.

I do not attempt, nor desire, to touch the question of the essential character of moral law and the source and implications of our religious life, but simply to point out that these activities, which are part of that inner personal experience which no science has succeeded or can succeed in dissecting, are, like all our expressions of will, uniformly manifested under conditions which are accessible to scientific treatment, and that whatever analysis can be made, for example, of the economic activities of man, the same may be carried out in regard to his moral and religious life. And this working-out of the naturalistic sciences of ethics and religion has been done through a psychological study of the correlations which connect their variations with systematic changes in the individual and his environment.

With the historical sciences the case stands differently. The study of history is an expression of our uncontrollable sympathy with all that touches the self which makes human experience at large the reflection of our own personal life. This characterization throws history into the one group with fiction and the drama as objects of interest, and seems to do violence to truth. The work of the biographer and historian is commonly discriminated from that of the novelist and poet, by reason of a difference in the points of view from which they regard a common material, namely, the living experiences of men and nations. The historian does not aim at a dramatic reincarnation of persons and situations; he undertakes a systematic analysis of human motives in order that the process of life may be made intelligible. The distinction is a real and important one. All history, as it reappears in the individual imagination, is transmuted into epic poetry, endowed with a dominant note and a dramatic unity which the original experience inevitably lacked. This bias, which is inseparable from personal consciousness, the historian sets himself to correct by an exhaustive

study of the elements which his most complex material embraces. These he aims to set forth in the order of their importance considered from the point of view of the whole system of human interests involved. The attitude of the historian is essentially judicial, and sets up as its ideal the utmost impartiality which is compatible with the specific assumptions which limit his treatment, such as the concept of an individual life, a social evolution, the development of a political form, and the like.

Nevertheless the analyses of the historian necessarily concern persons and occurrences, both of which are individual and unique. They cannot, therefore, constitute a science in the ordinary acceptation of that term. Both biographer and historian seek the truth; they employ the same canons as the scientist in establishing the correctness of their observations; but in the end their aim is radically different from that of science, and cannot be expressed in its terms. Life, whether of an individual or a group, is composed of a series of experiences which have their existence and can never recur; and be the subject-matter of history conceived as a succession of events or as the reaction of wills which gives rise to them, the ideal of the historian is faithfulness in the representation of these unique experiences, and nothing more.

But the individual occurrence has no interest for the scientist and no place in his system. For the successive stages which constitute the life-history of a crystal, a plant, a man, or a nation he has no concern. Not the individual fact, but the general principle, not the event, but the law of its occurrence, not the unique reality, but the universal form, is that which the scientist seeks. With the methods and results of historical research, therefore, psychology has no direct relation. The affiliations of history are with the utilitarian, not the normative sciences. It is a study of human character which is made in the chamber instead of the market, by the thinker instead of the politician, and is reflective instead of practical in its outcome only because of the irreversible character of the series of phenomena with which it deals.

Such an analysis can be called scientific only by an extension of the term which strikes at the very root of the characteristic which science has consistently striven to maintain as its essential basis. By this statement only a qualitative distinction between these two fields of investigation is intended, without (it should be needless to say) any thought derogatory to the dignity or value of historical study. The history of men and of nations is of absorbing interest to the psychologist, and affords material for many sciences, — economical, political, psychological, and social, — but these are not history, which, whether its subject be an individual or a social group, whether it be a person or an institution, whether

it be objectively or subjectively conceived, is essentially biography. Psychology can contribute much to the whole body of sciences whose subject-matter is human consciousness in its various special relations, but to the reconstruction of individual evolution, whether of life itself or of its permanent expressions in literature, art, religion, and political forms, it can contribute only as a preparatory discipline of the historian himself.

The contribution of psychology to the utilitarian sciences, like that to history, is indirect and disciplinary; but with the significant difference that, since the conditions with which these sciences deal are plastic instead of irreversible, the experimental study of mind not only gives intelligible order to their materials, but also modifies action in their regard. Of the manifold special relations, physical and mental, educational and therapeutic, which are embraced within the group, I shall select medicine and pedagogy as typical examples.

I do not choose these as representative of distinct final aims. Health as well as character can ultimately be expressed only in subjective terms. If a bilious condition affected neither the stomach nor the head, if an excess of uric acid resulted in no rheumatic twinges, if a lack of red blood neither ruined our complexions nor lowered our capacity for happy activity, where is the man who would give a thought to these things, or care whether they were normal or not; since they affected neither the quality of his present consciousness nor its duration? The whole value of the art of healing roots in the transformation which is effected in the subject of consciousness, and in that alone.

It is, however, with the methodology of the science and not its ultimate aim that we have here to do, and with this also the mental factor is found to be inextricably interwoven. The causes which the physician seeks are indeed physical. He does not attempt to cure the mind immediately, but directs his efforts toward a rectification of the perverted bodily condition which is assumed as the basis of the abnormal mental state. Nevertheless he cannot safely direct his treatment toward the body alone, but must constantly take into account the patient's condition of mind and the bearing upon his own special problems of secondary conditions of excitement, depression, and irregularity manifested in the form of mental disturbances, which may have not only prime importance for his diagnosis, but also the greatest influence upon the success or failure of his treatment of the original source of trouble.

In the practice of the physician symptomatology is as much a matter of psycho-physical responses as of physiological tests. This is true whatever be the nature of the disease, but it is especially important in the case of functional disturbances, above all

where these affect the cerebro-spinal system. In nervous diseases diagnosis proceeds largely upon a psychological study of abnormalities in sensation, idea, and utterance. It is not necessary to complicate the matter by any discussion of the relations of mind and body, nor to take sides in the debate between interaction and parallelism. Stated in purely physical terms, it is but recalling to mind the necessity of taking into account the intimate and peculiar influence which conditions of excitement in the central nervous system exert upon the general metabolism of the body, and the question is solely as to the variety of indications of which the neurologist or alienist may avail himself and the range of alternatives from which his treatment is to be selected. In the cases under discussion the determination does not rest solely upon anatomical dissection or physiological measurements or chemical analysis, but involves constantly an interpretative discernment of conditions inaccessible to direct examination through an observation of the whole system of mental attitudes and expressions which the patient manifests. Temperament, mental habits, resiliency of will, the very creed and philosophical point of view of a patient, must be included in the system of factors which indicate or influence the history of his disease. May it not be said that into every persistent functional trouble these factors enter deeply, and that the treatment of hysteria and insanity and the hundred and one ailments which cluster about unstable nervous function achieves success in proportion to the adequacy of the neurologist's acquaintance with medical psychology? A thorough course in the general science of mind is desirable in the preparation of every practitioner; but for the nerve specialist a knowledge of the results of experimental research on normal function, as well as its variations, is absolutely indispensable. For it must be remembered that in his work practice as well as diagnosis is largely mental in its nature. Drugs take a secondary place. The patient must be soothed, encouraged, and guided into new mental habits by a process of suggestion, stimulation, and restraint. The establishment through mental therapeutics of a more normal central condition, supplemented by food, air, and exercise, is trusted to bring about a restoration of equilibrium among the secondarily disturbed processes of the body.

Psycho-physical investigation has transformed our views as to the nature and origin of idiocy and epilepsy, of hysteria and insanity, and all the troubles of that misused and afflicted class, the mentally deranged; and has made over the whole system of treatment to which they are subjected. It is affecting more and more widely the general practice of the physician, by emphasizing the significant part which mental attitudes play in the history of disease.

And it should strip mental healing in all its forms of the gross and fantastic claims made in its behalf, and at the same time make progressively clearer the place and importance of truths which men of genuine insight in the medical profession have always recognized, but which in our own day no less than in the past are travestied by the practices of charlatans and the doctrines of pseudo-philosophical cults.

The relation of psychology to pedagogy has been confused by a debate concerning the methodological assumptions of the two sciences. The psychologist conceives the mind of man as a system of phenomena to be resolved into its constituent elements for the purpose of explaining the succession of changes which occur within it. It is involved in his very point of view that that which alone gives to mind its inner significance, namely, its existence as a personality realizing itself through a series of purposeful acts, must be ignored; and its development, instead of being treated as a true process of growth, must be conceived purely as a succession of events in time. He may thus be said never to have come within sight of the materials which are shaped by those who educate the will, form the judgment, and appraise the conduct of men. The latter deal with the individual as a system of inner motives and purposes, not as a phenomenon to be analyzed and explained. The child must be sympathetically understood, the neighbor influenced by argument and persuasion, the criminal treated as a responsible person. To view the human soul as a thing acted upon by calculable forces with determinate results is to substitute for the living personality a system of inert objects; it is to convert teaching and the execution of justice into technical manipulation and prudential restraint.

Now it is of course true that these human relations are differentiated from that which exists, for example, between an artist and his clay by just this personal, purposive character which is the essence of the material as well as its mold, and that the teacher aims not at a result, — for routine or enforced performance is the negation of the educational ideal, — but at a process, the transformation of a living will. Nevertheless, personality does not meet personality directly. Both termini are ideal purposes, but these must first be translated into a system of objective forces, — the technical methods and conditions of education, — and reinterpreted by the child in terms of his own personal experience as part of a larger and modified self.

The process through which the human will is realized is not a free inner development whose form is determined by an unimpeded manifestation of subjective forces. It is an expression constituted by the reaction of these inner purposes upon a complex and resistant

material. The will works under conditions which may inhibit or transform the original impulse as well as provide material for its incarnation. It is by the control of these modifying objective conditions that the educator characteristically proceeds in his work of molding the will itself. All, therefore, that experimental science has determined concerning the influence either of remote physical conditions or of specific physiological states upon mental function and quality is thus part of the mechanism which the technique of the teacher involves.

Among the sciences which so contribute to educational method is experimental psychology. It is not because psychology investigates those things which constitute the object of the teacher's activity that its results are of value in the latter profession. That which experimental psychology studies is a fiction similar to the wage-earner of the economist, and the results which he arrives at can no more be interpolated in the series of real experiences which constitutes the life of each person than the living man can be expected to fulfill the laws of competition in independence of the innumerable other motives which affect his conduct. The life of the child is indescribable in the terms of experimental psychology, or indeed in that of any science whatever.

The availability of laboratory results rests upon an altogether different basis, which it possesses in common with all sciences treating of our humano-naturalistic environment. It is because psychology, in its study of mental processes, necessarily expresses its conclusions in terms of those general physical relations which constitute at once our sole means of social communication and the conditions under which our wills find expression for their activity. Whatever bearing hygiene and sanitation, climatology and physiology, pathology and anthropology have upon the mechanics of education, the same has experimental psychology in a yet more intimate sense. Its determination of the system of norms which characterize the successive stages of development, — a work which as yet is scarcely begun, — and its formulation of the relations between varying physical conditions and fluctuations in the mental activity enable the teacher to provide more fit and healthy conditions under which the development of the child shall take place, to adapt the technique of instruction to the irreversible relations which exist between the personality of the child and his material environment, and to treat in a more rational manner the conduct and accomplishment of those under his charge.

It is not only consistent with this relation, but also a logical result of its existence that the deductions of experimental psychology can be applied only in the mass. The individual soul is unquantifiable, and can be treated only intuitively. Its education is the

result of formative influences which can be expressed only in terms of will and personality. But this is a part of the truth only. Above the infinite variations which the universe of personalities presents arise the types which their common features compose; and wherever individuals are to be treated as a class the results of science, whether physical or mental, are available in manipulating them. Enlightened educational method is psycho-technical as well as inspirational, and necessarily involves a sensitive regard for the whole set of extrinsic conditions under which development takes place. To know the influence of air-space, light, exercise, and food upon human life and activity is part of the teacher's business. To understand the relation of respiration, posture, digestion, and nutrition to mental work is part of his business. To recognize the bearing of atmospheric changes, in temperature, humidity, pressure, and electric condition is part. The discharge of his office calls also for an understanding of the consequences of nervous instability, excitement, and depression; of the bearing of attitudes of hope, anxiety, confidence, trust, and suspicion, and of the significance, in a word, of the whole series of psycho-physical changes which take place in the individual in connection with specific alterations in his surroundings, condition, and prospects. And these are in large part worked out by the experimental psychologist as supplemental to his more immediate task of ascertaining the norms of mental function and thereby establishing criteria by which the treatment of classes of individuals may be intelligently controlled.

THE PROBLEMS OF EXPERIMENTAL PSYCHOLOGY

BY EDWARD BRADFORD TITCHENER

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THE first difficulty that confronts one, as one attempts to envisage the problems of experimental psychology, is the difficulty of definition. What is a psychological experiment? What is the scope of experimental psychology? Is experiment simply a method of work, applicable to all or to some special parts of the psychological system; or is experimental psychology a distinct branch of psychology, sharply marked off from other and coördinate branches?

The programme of this Congress would seem to have decided the issue in the latter sense; for we find sections of General Psychology, of Comparative and Genetic Psychology, of Abnormal Psychology, and of Social Psychology, arranged alongside of our own Section of Experimental Psychology. If, then, I wished to take shelter behind the plan of the programme, I might, with some show of justification, confine myself to the discussion of those problems in normal, human, adult psychology which still form the staple material of experimental investigation in the laboratories, and might omit all reference to the extensions of the experimental method to outlying fields. Such a course would, nevertheless, be unsatisfactory. The extensions of the method are coming to play a larger and larger part in psychological discussions and in our psychological literature; and it behoves us to take up a stand with regard to them, positive or negative, appreciative or critical. I shall try not to shirk this duty. Let me say, however, at the outset — and I shall have more to say upon the matter presently — that, whatever else experimental psychology may be, there can be no doubt that the subjects to which the programme apparently limits us are experimental psychology. The examination, under strictly controlled and properly varied conditions, of the normal, adult, human mind, — this is psychological experiment in its pure, primary, and typical form. And it is this typical experimental psychology the problems of which we have, in the first place, to consider.

In approaching this question of the problems of experimental psychology, it seemed to me that the surest key to the future lay in the accomplishment of the past. The best way to find out what experimental psychology has to do is, I thought, to make certain of what it has already done. With this idea in mind, I naturally had recourse to our bibliographies, — the American bibliography of the *Psychological Review*, and the German of the *Zeitschrift f. Psychologie*. The result was not encouraging. We all knew, of course, that the plan of arrangement of these two yearly lists is by no means the same. What I, for one, had not realized was the fact that the plan of arrangement of both is eminently unsystematic. We use a bibliography, and find it useful; we do not need to inquire further regarding it. But I do not believe that any psychologist, of whatever school, could write a systematic psychology on the lines laid down in these bibliographies. This fact — if fact it is — seems worthy of a passing remark; for it indicates, in a concrete and definite way, that in spite of the enormous increase of our psychological knowledge, within the last few decades, we are still very far from any complete or rounded science of psychology. I am not so much disposed to blame the bibliographers — I take their lack of system to be unavoidable — as I am to draw a long breath at the amount of work which still remains for us to do.

Finding that I could not avail myself of the bibliographies, I took the bull by the horns, and went to the psychological journals. I listed and analyzed the experimental papers in the *Philosophische Studien*, the *Zeitschrift f. Psychologie*, the *Année psychologique*, the *American Journal of Psychology*, and the *Psychological Review*; not with any view of substituting a classification of my own for the classifications now employed, but simply with the intention of finding out what was there. If you object that these five journals are not coextensive with experimental psychology, I must reply that they are at any rate representative, and that the duration of human life is limited. Even so, I am not sure that the game was worth the candle. I earned, perhaps, by hard work, the right to stand upon this platform; but I found out very little that I did not know before.

If I am to indicate, briefly, the results of this inquiry, I must premise that we are agreed upon the distinction, within experimental psychology, between the properly “psychological” and the psycho-physical attitudes. The object of the “psychological” experiment, as I am now using the phrase, is introspective acquaintance with the processes and formations of a given consciousness. The object of the psycho-physical experiment, as we have recently been reminded by G. E. Müller, — I suppose that we are all fresh from a reading of his *Psychophysische Methodik*, — is a numerical determination. Thus, the object of the simple reac-

tion, regarded as a psychological experiment, is the introspective analysis of the action-consciousness, given under certain fixed conditions; the object of the same experiment, regarded psychophysically, is the ascertainment of a representative time-value and of the manner and limits of its variation. Both points of view are covered by the general term "experimental psychology"; both types of experiment are valuable; but the two must not be confused. If, now, we look at the contents of the *Philosophische Studien*, the oldest established of our five journals, we find that three departments of experimental investigation are preferred high above the rest: sensation, perception, and action. There is, moreover, a very definite trend toward psycho-physics, so that, *e. g.*, at least two fifths of the articles that deal with sensation must be classed outright as psycho-physical. The remaining experimental papers may be subsumed under the headings: association of ideas, attention, feeling, memory and recognition, the organic accompaniments of the mental life, the range of consciousness, the processes involved in the activities of reading and writing, and the time-consciousness. What we find in the other four journals is a continuance of interest in these same problems, but a continuance of interest which is combined with a shift of emphasis from psycho-physics to psychology, and a widening of the area of experimental work. Thus in the *Studien* there are about twice as many articles on sensation, psychological, and psycho-physical, as there are on perception; in the *American Journal*, the articles on perception are more numerous than those on sensation; in the *Psychological Review* there are, roughly, three articles on perception for every two on sensation, while the strictly psycho-physical papers may almost be counted upon the fingers of one hand; and the *Année psychologique*, if I have counted aright, has practically as many articles on memory as it has on perception, and more of either than it has on sensation, while the spirit of the work has, from the first, been adverse to psycho-physics. Or again, the contents of the *American Journal* may, with some manipulation, be brought under the same headings that served for the *Studien*, save that one additional caption must be made for studies of voluntary movement (other than reactions) and of the experiences of effort and fatigue; while those of the *Zeitschrift* and the *Psychological Review* require at any rate three or four new rubrics, to cover work done upon mental inhibitions, the process of learning, motor automatisms and motor dispositions, habit, etc. I do not wish to labor this point, even if I must leave it with some sense of injustice to the periodicals under review. You know, without my telling you, and I knew, without going to the magazines, that the course of experimental psychology in recent years has been away from

simple psycho-physical determinations, and towards introspective analysis; and that the experimental method has been continually extended from the simpler processes to the more complex — whether to complexes hitherto untouched by experiment, or to unfamiliar phases of familiar mental formations. All that a study of the journals can do is to quantify and define these facts. I should like to add, however, that their study has brought home to me, in a very vivid way, the immense complexity and far-reaching interconnection of the mental life. The contents of experimental papers are oftentimes so varied that only a classification *a potiori* is possible; and, oftentimes again, results that are but incidental to the given topic of investigation prove later on to be fundamental for problems from which this topic had seemed disconnected and remote.

So much, then, by way of preparation. Let us now, in the light of it, attempt to formulate the present problems of experimental psychology. You will remember that I am speaking of experimental psychology *sensu stricto*, — of the experimental investigation of the normal, adult, human consciousness. I wish that I could proceed systematically. But, in the existing condition of the science, it is better to be topical. We may, however, begin in a quasi-systematic way, by considering the three fundamental problems of sensation, affection, and attention.

(1) *Sensation*. The senses, viewed from the standpoint of psychological knowledge, fall into three principal groups. We know a great deal about sight and hearing; we know a good deal about taste, smell, and the cutaneous senses; of the organic sensations, with a very few exceptions, we know practically nothing. There is work to be done — I say this emphatically — in every field; there is probably no single chapter in sense-psychology that may not, with advantage, be reopened. Nevertheless, we know a great deal about sight and hearing; the literature of these senses is voluminous; advance in our knowledge lies (I am speaking in the large, and quite roughly) in the hands of the few experts who have occupied themselves particularly with visual and auditory problems. And we know a good deal about taste, smell, and the cutaneous senses; although here, doubtless, there is much steady work, rank-and-file work, yet to be done. We know something of the organic complex concerned in active touch, and something of the static sense. On the other hand, of the organic sensations in general we know practically nothing. Here, then, as I take it, lies the immediate sense-problem for experimental psychology. When we remember the importance of organic sensation in the affective life, its importance as the vehicle of sensory judgments in psycho-physical work, the part it plays in the mechanism of memory and recognition or in the motives to action,

its importance for the primary perception of self; when we remember the widespread character of the organic reaction set up by any sensory stimulus; when we realize that some psychological systems have recourse to it from beginning to end, while others (Wundt's recent *Grundzüge* is an example) practically ignore it; when we remember that certain questions of prime systematic importance hinge upon it, — the question of the duality of the conscious elements, of the relative range of sensation and image, of what is called affective memory, and so on, — we can hardly fail to see that here is a great gap in our psychological knowledge, the filling of which calls for a persistent application of the experimental method. Of all problems in the psychology of sense that are now before us, the problem of the number, nature, and laws of connection of the organic sensations appears to me to be the most pressing.

In the domain of psycho-physics, I see no single problem of supreme import, but rather a need for patient, continuous work by the methods already formulated. The inherent aim of psychophysical investigation is, as I have said, the determination of the psycho-physical constants. Now it is by no means difficult to vary a psycho-physical method, and so to set up a claim of originality; but it requires patience and some self-sacrifice to work through a psycho-physical method to the bitter end. What we now want is less ingenuity and more work, — accurate, continuous work all along the line. We have methods and we have formulæ. Let us give them a thorough test. The results will be of extreme value for psycho-physics, and no one need fear that they will be barren for psychology. On the contrary, no small part of our analytical knowledge of the higher processes, as they are called, — processes of judgment, of comparison, of abstraction, — derives straight from the method-work of psycho-physics. It would, in my opinion, be time and energy well spent, if every existing laboratory were to undertake what one might term the routine work of testing-out, without modification, one or other of the classical methods.

I am aware that psycho-physics trenches upon large problems. I ought, indeed, to be keenly alive to these problems, seeing that for the past three years they have occupied me, with but little intermission. There is the great problem of mental measurement itself; there are the minor problems of the validity of the difference limen, the equality of just noticeable differences, the range of Weber's Law, the correlation of functional constants, and what not. If I were speaking of the history of experimental psychology, and not of its present status, I might hope to show you that more has been done towards a solution of these problems than the current statements in text-books and magazines would lead one to

suppose. But, with these problems in mind, I insist that the immediate demand in psycho-physics is for careful, straightforward work by the approved methods. We shall gain more from such work than from anything else.

(2) *Affection*. When we turn to the affective processes, we have no such difficulty in selecting our problems. This whole chapter in experimental psychology is one single problem. Will you believe—I had myself not realized it before—that in all the five and thirty volumes of the *Zeitschrift* there is not a solitary experimental article on the feelings? This, although the same volumes contain, roughly, two hundred contributions to experimental psychology! The *Studien* has about one hundred and forty experimental papers, of which nine deal with affective psychology or experimental esthetics: that is the best record I have found. Now look at the problems. We are not at one as regards the nature and number of the elementary affections; there are experimental psychologists who reduce all the elements of consciousness to sensations. We are not agreed whether the diversity of feelings is to be referred to a diversity of affective process proper or to a diversity of organic sensation. Some of us think that a given affective process is coextensive with consciousness; others maintain that consciousness may be a mosaic of affections. Some assert that the feeling-element is effective for association; others deny it this effectiveness. Some find the best illustrations of the law of contrast in the sphere of feeling; to others, contrast may itself be a feeling. Our facts are few, our laws dubious. Surely, it is time to gird up our loins and make serious business of these affective problems.

I have insisted on the paucity of the experimental articles upon feeling. I do not, by this, mean to accuse experimental psychology of idleness or neglect: Lehmann's two books would save us from such a charge, if we had nothing else to offer. But these two books are characterized by their reliance upon the expressive method,—a method which, as you are aware, has stood in the forefront of many recent discussions. I have been at the pains to make out a complete table—complete, that is, so far as I was able to make it complete—of the results obtained by the method of expression. There is much to be learned from them. But I cannot believe that the method will help us very greatly towards an affective psychology. The organic reactions which the expressive method registers are closely interwoven and interdependent, and the task of differentiation presents difficulties which, if not insurmountable, have at least not yet been surmounted. I am disposed to think, *e. g.*, that the plethysmograph, as a differential instrument, is doomed to disappear from our laboratories. The sphyg-

mograph, and especially the pneumograph, hold out better hope; but I doubt if, at the best, a differentiation of affective qualities is to be expected from them. From the method of suggestion, which really takes us over into social psychology, I expect still less. There remains, at present, only the method of impression, which has done good service in a limited field, and which should be capable of modification and expansion. However, I am fortunately not called upon here to propose methods of work, but only to indicate problems. And the facts and laws of the affective life, the life of feeling and emotion, form one of the largest and one of the most insistent problems of modern experimental psychology.

(3) *Attention.* The prominence given to the state of attention is characteristic of experimental psychology, as contrasted with the empirical psychology of associationism. It is, indeed, one of Wundt's greatest services to the new psychology that he early divined the cardinal importance of attention in the psychological system, and began that series of experiments of which we can by no means see the end to-day. For I imagine that we must all admit, if we are honest with ourselves, that the body of facts at our disposal, large and varied as it is, is yet not adequate to a theory of the attentive state. We must know more of the constitution of the attentive consciousness, and of the mechanism of distraction; much remains to be done before we can settle the vexed questions of the distribution of attention; we must work out, experimentally, the relation of attention to affective process; even the familiar problems of the range and duration of the attentive state are — well, are still problems. I am not sure that we shall not have to manifold the study of attention, as we have that of memory; and to speak in future of the facts and laws of visual attention, auditory attention, and so on, instead of taking "attention" as a single state. I am certain that we must have a more specialized psychology of the great variants and resultants of attention — a specialized psychology of expectation and habituation, of practice and fatigue.

If, then, I have seized the situation correctly, we have in these three fundamental departments of psychology three problems of different orders, the solution of which calls for a diverse endowment of psychological skill and insight. There is an outlying group of sensations that can, we must believe, be successfully attacked by the analytic methods which have been successfully employed in the other sense departments. The experimental study of the affective processes calls for a much greater gift of originality and constructive imagination; we have to shake off literature and tradition, and to begin almost at the beginning. In the case of attention, we have to push on and make progress along paths already marked out, but insufficiently explored.

What holds in this regard of the attention seems to me to hold also (4) for that mixed medley of formations which we include under the general term *perception*. I wish that we could banish the word perception to the special limbo reserved for unregenerate concepts, and could put in its place a round dozen of concrete and descriptive terms! But it has, so far, held its own, and I can hardly avoid its use. We know, now, a great deal about tonal fusion, about space-perception, about rhythm, — if rhythm be a perception; we know something about time-perception. You will, however, agree with me that no one of these topics is a closed chapter. I see no very pressing problem, as I look over the field; but I see, in every quarter of it, good work that needs doing. I am sorry if this opinion appears indefinite; it is the opinion that I have come to after a study of more than a hundred and fifty articles that deal with perception in the five journals referred to just now: and I cannot make it more definite without going so deeply into detail as far to exceed the time allotted to me.

We can speak a little more concretely of (5) *recognition, memory, and association*. Association was, at first, handled in rather step-motherly fashion by experimental psychology. Of late years, however, we have come to see the importance of detailed analyses of the associative, as also of the recognitive consciousness; we have, I think, finally broken free from the traditional schemata, and are approaching the problem with open minds. Something has already been done; much more remains to do. The experimental study of memory was begun, by Ebbinghaus, rather in a practical or psycho-physical than in a psychological spirit. In the development of the work since Ebbinghaus, we can trace two tendencies: a tendency towards psychological analysis of the memory-consciousness and the explication of the psychological laws of memory; that on the one hand; and on the other, a tendency towards the application in practice of psychological results. While, now, I take the recent experimental work on memory and the associations involved in memory to be work of a high order; and while I believe, in particular, that certain of the methods employed are a valuable addition to our psychological repertory, I cannot but think that the two tendencies just mentioned have not been kept as distinct as they should have been, and that experimental psychology has suffered in consequence. We can hardly hope to get a psychology of memory and association on the ground of *Reproduktionstendenz* and *Perseverationstendenz*; we can hardly hope to get practical rules, if they are what we want, out of the published studies on economy of learning. The *Tendenz*-concepts are psycho-physical, and tend to cover up the complexity of actual experience; the practical studies are made under conditions widely remote from those that obtain in ordinary practice.

Let us realize that we may attempt here any one of three distinct problems. We may aim at a psychology of memory and association; *i. e.*, we may seek to record our experience, to trace the introspective patterning of the memory-consciousness. We may aim at a psycho-physics of memory; *i. e.*, we may try to establish formulæ akin to the well-known formula of Ebbinghaus's *Gedächtnis*, which represents retention as a function of time elapsed. Or we may aim at an applied psychology of memory; we may work out, experimentally, an art of acquisition. I do not say that an investigation into one of these three topics will throw no light on the other two; on the contrary, I have already insisted on the value of indirect results in psychological inquiries. But in our thought, at any rate, the three problems should remain separate and distinct. They offer, without doubt, a wide field for future research. I would suggest, though with all reserve, that the psychological study of memory and association may, in the long run, help us to clear up the much-disputed question of the subconscious. There are, as you know, experimental psychologists who work simply in terms of introspection and of physiological process; there are others who interpolate between these terms an unconscious or subconscious mentality. I cannot go into detail; but it seems to me that, if these differences of opinion can in any connection be brought into the laboratory for adjustment, it is here, in the investigation of memory and association, that we may hope to introduce them.

I come next (6) to *action*. You will remember that, in its early years, experimental psychology was much concerned with the psycho-physics of action; indeed, the problem of the "personal equation" is a good deal older than our laboratories. This interest has never flagged. If we have not heard so much of late about reaction experiments, we have heard a great deal about the psycho-physiology and psycho-physics of voluntary movement. And I think that we can leave these things to take care of themselves; we may, without any question, look to the next few years for improvements of technique, for revision of numerical determinations, for recasting of theories. That work is under way. What I should like now to emphasize is the need for investigation of the more strictly psychological kind. Our knowledge of the action-consciousness is still very schematic, very rough, in part very hypothetical. It has been recognized for some years that the reaction experiment may be turned to qualitative, *i. e.*, to analytical account; but so far more use has been made of this idea in laboratory practice than in research. We must start all over again, and take the action-consciousness seriously. I once made a sort of reaction experiment of the setting-up and taking-down of an inductorium; the student made the manipulations continuously, under time-control, and gave his introspective

record at the end of each experiment. We worked at the problem for a year, only to learn that we had been too ambitious; we had, as even with experience one is apt to do, underestimated the complexity of consciousness. At the same time, we decided that the problem was soluble; we gathered in a good store of introspective results, even if they were too individual, and too discrete, to be employed for generalization; with more time and more observers, or with a simpler set of voluntary movements for study, we should have accomplished something for psychology. I regard such studies as those recently made on the control of the *retrahens* of the ear, or on the control of the winking reflex, as extremely promising in this field. At any rate, whether we work from the classical reaction experiment, or whether we take voluntary movement under more natural conditions, the problem is quite definite: we must submit action to an introspective analysis as detailed and as searching as that to which we have subjected perception.

I have put off (7) *imagination*, because I am a little afraid of the term. It is a word which, like perception, I should be glad to see discarded from the vocabulary of experimental psychology. I think that we employ it more vaguely even than we employ perception; and I think that the future will substitute for it a number of descriptive terms. If we begin with the elementary process, the image itself, we must plead ignorance on two fundamental points: whether image-quality is coextensive with sensation-quality, and whether image-difference is adequate to sense-discrimination. If we go to the other extreme, and regard imagination as the general name for a group of typical formations, — as a concept coördinate with memory, — we must surely say that experimental psychology is, as yet, hardly over the threshold of the subject. We know, perhaps, how to set to work: some investigations have been made, and some hints toward method have been given; but, in the large, this chapter of experimental psychology remains to be written.

(8) Of the more complex *affective* formations we can say but little until we have a better psychology of feeling. No doubt, there are certain problems in the psychology of sentiment, and more especially in that of the esthetic sentiments, that can, within limits, be handled without regard to the ultimate categories of feeling. I should, however, consider these limits as very strictly drawn.

(9) For the higher *intellectual* processes we have, I think, three sources of knowledge: direct experiment, — that, as you know, has been well begun, — the indirect results of experiment upon sensation, and *Völkerpsychologie*. I am inclined to lay great stress upon the second of these sources. Experimental psychology has often been reproached, on the one hand, because it devotes most of its time to sensation, and on the other because the results of its dealings with

the higher processes are jejune and meager. To the former charge I plead guilty, in so far as we have avoided the affective problems, though this neglect is not at all what the framers of the accusation have in mind. And even so, I might offer in extenuation the experimental work upon attention. But this apart, I think that experimental psychology is justified in its choice of topics. The only way to catch the higher intellectual processes in course of formation is to work from the periphery, by way of the sense-organs. It is when we are working with tones, or with lifted weights, that the amazing diversity and complexity of judgment becomes apparent. If, on the contrary, we take any one of these higher processes full-formed, and attack it directly, we are very likely to find that the vehicle of the mental function is extremely simple; there is a law of reduction, running all through mind, whereby a highly complex formation tends to degenerate, to reduce to a stereotyped simplicity. It is, to my mind, a distinct merit of experimental psychology that it has brought to light this meagerness of content in the examination of "higher" mental functions of an habitual order; and it is a healthy instinct that sends us back and back again to the channels of sense, as we seek an appreciation of the fullness and richness of the mental life. I may add, though I say this a little hesitatingly, as a merely personal impression, that the introspective attitude of the observer seems to me to be more nearly normal, less artificial, in cases where the avowed object of experimentation is comparatively simple. If you are asked overtly to grapple with a complex psychosis, you are likely to brace yourself to the task, to put on an armor of preconceived opinion; if the psychosis meets you unawares, finds you off guard, the facts will have their own way with you. A distinguished English psychologist once declared that it is futile to attempt the problems of recognition by way of rotating disks of black and white sectors. I should say, on the contrary, that these disks are, in principle, the very best means to an understanding of the higher intellectual formations.

As for the ultimate goal of experimental endeavor, I suppose that we may call it (10) the problem of *consciousness*, — not in the sense in which that problem is understood by the theorist of knowledge, but in this sense: that, as hitherto we have analyzed and traced to their conditions certain mental processes of lesser or higher degrees of complication, so now we analyze and trace to their conditions total consciousnesses, given in varying states and constituted of various formations. The difficulty of this problem is enormous. Only those of you who have attempted it, in one case or other, for yourselves, who have discarded classificatory terms, and faced the living facts; only these, even of experimental psychologists by profession and training, can form any proper idea of its difficulty.

It is a problem for which we are not yet ripe. We can approach it only by way of theories which we know to be inadequate, and by help of hypotheses which we cannot substantiate by facts. But it is the problem towards which we are trending, and the road to its solution lies, as in my judgment all such roads in our science lie, not through brilliant suggestion and ingenious forecast, but through patient and steady work. This work must be in part the work of experimental psychology, as we are here interpreting that phrase; in part the work of what is called individual psychology — though, indeed, from perception onwards, the difference between these two departments of psychological investigation is simply a difference of accent. Or, to put the matter concretely, we must work not only with the doctrine of states of consciousness, comparing experimentally the attentive and the inattentive, the hypnotic and the dreaming, all sorts of normal and abnormal states of consciousness, but also with the doctrine of conscious types which we owe (and the debt is great) to the psychologists of individual variation.

So I finish the first part of my review. If I have omitted anything of consequence, or if I have seemed to do injustice to any department of work, I must ask for pardon and correction; I have spoken with the utmost possible brevity. My own habitual thought in experimental psychology is positive, not negative; that is, I am accustomed to look upon our problems rather as continuations of work already begun than as gaps and lacunæ in our system of knowledge. I could wish that it had fallen to my lot to address you in this positive way, to show what experimental psychology has done, how in the past few decades it has changed the face of systematic psychology, rather than to insist upon the tasks that still lie before it. I have, however, tried to be entirely honest; I have, I think, rather exaggerated than concealed our deficiencies; and I would have you remember that this definite formulation of things to do presupposes and implies that much has been done. When Wundt wrote his famous essay, *Ueber die Aufgaben der experimentellen Psychologie*, the problems that loomed before him were the psychophysics of sensation, the analysis of perception, the time-relations of the higher processes. To-day, the list is longer and the range wider. But it is only because we already possess that we can say, in such detail, what still needs to be added to our possessions: in which fact let us take encouragement.

I pass, with some diffidence, to a consideration of wider issues, — of those extensions of the experimental method, proposed or attempted, of which I spoke at the beginning of this address. Most psychologists, I take it, would agree that the picture I have drawn of experimental psychology in what has preceded is drawn too

narrowly. The title of psychologist is, indeed, given at the present day to two distinct types of scholar. On the one hand, we have the psychologist as I have represented him: a man keenly interested in mind, with no purpose beyond mind; a man enamored of introspection; a man to whom the most fascinating thing in the universe is the human consciousness; a man to whom successful analysis of an unresolved mental complex is as the discovery of a new genus to the zoologist or a new river to the explorer; a man who lives in direct companionship with his mental processes as the naturalist lives with the creatures that are ordinarily shunned or ignored; a man to whom the facts and laws of mind are, if I may so put it, the most real things that the world can show. On the other hand, we have men to whom mind appeals either as a datum or problem, or both, to be dealt with by philosophy, by theory of knowledge and theory of being; or as a natural phenomenon, something that must be taken account of whenever life is taken account of, in evolutionary biology, in anthropology, in medicine, and where not. Of the psychologists of this second order, the philosophers, you will say, do not concern us. Yet they do, somewhat. I suppose that all sciences — certainly, all young sciences — are liable to be told by well-wishers that they have mistaken their work; that they would advance more quickly, and more solidly, if they would put off their present business, and settle down to this or that suggested problem. At any rate, experimental psychology has always received such hortation from friendly philosophers. If, now, I have ignored this advice, it is not from lack of gratitude, but simply because, after consideration, I have come to believe that experimental psychology knows what she is about, and can walk without assistance. Outsiders, we are told, see most of the game. I venture to urge that the insider better knows how the game is to be played.

We are left with the two opposed types: what shall I term them? — the inner and the outer, the subjective and the objective, the narrower and the broader. What, then, of the outer, wider, objective problems of experimental psychology?

Let us be clear, first of all, — the matter admits of no hesitation or compromise, — that the experimental psychology of the normal, adult, human mind must take the form that I have described, — the form of introspective analysis. I have little sympathy or patience with those experimentalists who would build up an experimental psychology out of psycho-physics and logic; who throw stimuli into the organism, take reactions out, and then, from some change in the nature of the reactions, *infer* the fact of a change in consciousness. Why in the world should one argue and infer, when consciousness itself is there, always there, waiting to be interrogated? This is but a penny-in-the-slot sort of science. Compared with intro-

spective psychology, it is quick, it is easy, it is often showy. We have been a little bit corrupted by the early interest in psychophysics; or perhaps, more truly, we have not all learned instinctively to distinguish between psycho-physics and psychology proper; and so we are apt to take the tables and curves of reactions for psychological results, and the inferences from them for psychological laws. Now the results, where they are not purely physiological or anthropometrical, are psycho-physical results. As such, they have their usefulness; and the psychological laboratory is their right place of origin. But there is no reason why one should gain psychological credit for them — still less for erecting a speculative psychology upon their foundation. This mode of psychologizing is inherently as vicious as any of the constructive modes of the older psychology, the psychology before experiment. Historically, it has proved disastrous; ¹ it falsifies problems and obscures real issues; we must set our faces against it now and for all time. How, indeed, shall one call a man a psychologist who deliberately turns his back upon the one psychological method, in the one field to which that method directly applies? There is no excuse, in psychology, for the neglect of introspection, save the one — and that must be demonstrated — that introspection is impossible.

Having said this much by way of preface, I may take up the further question. We can hardly open a magazine nowadays without finding applications of the experimental method beyond the limits of the normal, adult, human mind. In animal psychology, in child psychology, in various departments of mental pathology, the experimental method is employed. Even the conservative *Studien* contains articles on the state of sleep and dreaming, and Wundt has looked more favorably upon experiments under hypnosis, since they promise to confirm his theory of feeling. Experiments on children and animals have for some years past occupied the attention of leading American psychologists; work on child psychology is characteristic of the *Année psychologique*, and is being published more and more freely by the *Zeitschrift*; you all know the avowed purpose of Kraepelin's *Arbeiten*. I need not multiply references. Wherever psychological interest has gone, in these fields, the experimental method has gone with it. Sometimes the particular experiment is borrowed forthright from the normal practice of the laboratory, sometimes the procedure has been recast to suit the novel problem; sometimes the experimental method is taken seriously, employed with care and knowledge, sometimes it is thrown in as a makeweight, without responsibility or understanding; sometimes

¹ Is proof needed? Think of the early work upon the just noticeable difference, upon the simple reaction, upon the "time-sense;" or think of Wundt's current discussion of Weber's and Merkel's laws!

it is praised, sometimes decried. All this is natural. The important thing for us is, I think, the recognition that the experiments are a part of "experimental psychology," in the sense of this paper, and must be taken account of in any general review of the problems of experimental psychology. The psychologist of the laboratory is apt to emphasize the crudity and roughness of the work, and its neglect of introspective control; the psychologist of the clinic or the school-room or the animal-room is apt to consider his colleague narrow and his colleague's work finical and meticulous. The transcending of this difference, the reconciliation of these views, I take to be a very real problem for experimental psychology, — though a problem of a different order from those that I have been discussing. And I suggest the following points for your consideration. First, that one cannot be too nice or too careful in experimenting on mind. There is no such thing as over-refinement of method.¹ Let those who doubt this fact read Martin and Müller's *Unterschiedsempfindlichkeit*; the more delicately one analyzes, the more subtle does mental process reveal itself to be. Galton's questionnaire results on visualization are psychology, and valuable psychology; but they are also pioneer psychology. Now, the pioneer may pride himself on his work, but not on the roughness of his work. When the laboratory psychologist smiles at the charcoal sketches of objective experiment — well, he does wrong to smile, because honest work should not be laughed at; but he is right in his conviction that the details are all to come, and that the simplification of the lines means over-hasty generalization. Mind is, so to say, our common enemy; and the laboratory psychologist learns, by dearly bought experience, not to underestimate his opponent. Secondly, I would remind you that, after all, objective work in psychology must always be inferential; introspection gives the pattern, sets the standard, of analysis and explanation. If we interpret the animal mind by the law of parsimony, our only justification is that introspection discovers the reign of this law in the human consciousness; if we subsume the evolution of mind in the animal series to the principle of natural selection, our only justification is, again, that introspection discovers the working of this same principle in our own case. As I put it just now, there is but one excuse for the neglect of introspection in psychology, and that is that introspection is impossible; but even here our neglect is methodical only, and does not — must not — extend to interpretation. These things have been said so often² that they have become

¹ A method may be too refined for the man who is using it, or for the problem upon which he is immediately engaged. But these are different matters.

² In saying them, from the "narrower" point of view, I am, of course, hoping for similar cautions (at any rate, for varied advice and information) from the more "objective" psychologists. What they will have to tell their colleagues of the laboratory, I do not know; but I have no doubt that it will be worth listening to.

commonplaces; but even a commonplace may be true — and it makes a difference, too, whether the truth be urged with polemical or with friendly intent. I should like to see more coöperation between the alienist, or the student of comparative psychology, and the laboratory psychologist; quite apart from practical results, such coöperation would be of great advantage to the psychological system. We can hardly hope — this point should be borne in mind — that the two interests, the objective and the subjective, will be combined in the same person. When one has once stepped inside the ring of the normal, adult consciousness, there is very little temptation to step out again; the problems that I listed a little while ago are enough to occupy several generations of workers, and the fascination of the work is like the fascination of the mountains or the sea. And if one begins from the outside, with the child or the animal or the abnormal mind, there is little likelihood that one can breathe the confining air of the laboratory, or that one will presently limit one's range of interests to one's self. Partly it is a matter of temperament, partly a matter of chance introduction or of continued occupation. The two types of psychologist are distinct: all the more reason that they should work in harmonious coöperation.

I hope that, in this latter portion of my address, I have not traveled too far out of the record. Some men have problems thrust upon them. And, after all, if what I have said contributes ever so little to the furtherance of mutual aid and the increase of mutual esteem, as between psychologists of different camps, I may hope for forgiveness, even though I have exceeded the letter of my instructions. Now let me briefly summarize what I have said. I began, you will remember, by pointing out that, above and apart from the many special problems of experimental psychology, there lies the great problem of self-definition, of the range and scope of the experimental method in psychology. Then, under the headings of psychology proper and of psycho-physics, I called your attention to a series of laboratory problems that, more or less insistently, more or less immediately, call for solution. Whatever else experimental psychology may be, I said, these issues are issues of experimental psychology. Incidentally, I deprecated any departure, at the bidding of philosophy, from the straight path of psychological investigation; and I deprecated also that neglect of introspective control in psychology which has been the besetting sin of many whose direct interest lies in psycho-physics. I then went on to include in experimental psychology the more objective applications of the experimental method in child psychology, in animal psychology, in abnormal psychology. It was not my province to detail the special questions in these fields; they form the topic of other

addresses in other sections. But I should regard as incomplete any review of the problems of experimental psychology which omitted reference to them. Their consideration helps us to attack that first problem of definition, clarifies our method, and furnishes an opportunity for the give-and-take of criticism and encouragement. We cannot afford to misunderstand one another, as we cannot afford to waste our time on unreal and constructive problems. The work presses; the rule of work is definite and unmistakable; there is room in the workshop for all sorts and conditions of men. I do not think that the outlook of any science could be more hopeful; I do not think that we need fear a lessening of that quiet enthusiasm which, from the first, in the beginner as in the mature student, has been the salient characteristic of the experimental psychologist.

SECTION C

COMPARATIVE AND GENETIC PSYCHOLOGY

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(Hall 6, September 24, 10 a. m.)

CHAIRMAN: PROFESSOR EDMUND CLARK SANFORD, Clark University, Worcester, Mass.

SPEAKERS: PRINCIPAL C. LLOYD MORGAN, University College, Bristol.
PROFESSOR MARY WHITON CALKINS, Wellesley College.

SECRETARY: DR. R. M. YERKES, Harvard University.

THE Chairman of the Section of Comparative and Genetic Psychology was Professor Edmund Clark Sanford, of Clark University. In opening the Section the Chairman stated that the field of the Section was indeed no narrow one.

"We have nothing less than the full breadth of existing mental phenomena from man to micro-organisms, and the whole history of them onward from their first beginnings in the universe and in the individual. This immensity is, for the most part, obscure enough, but light has begun to dawn at two adjacent spots: in the study of mind in animals, and of the growth of it in the human child; and these areas have already overlapped a little in the study of animal infants.

"Progress at the first of these points has been, until yesterday, one might almost say, of all things the slowest. From the beginning of time there has extended in an almost unbroken stretch what may in all literalness be called a mythic period, a period when animal psychology consisted for most people in simply imagining, with a variable discount, how they themselves would think and feel if they were in the animals' place, and, for certain philosophers, in the opinion that animals were pure automata. Though this mythic period has not passed even yet for many who busy themselves with the doings of animals, but remains as a survival, another day has dawned, a day of experiments and co-operating workers, a day of science in earnest. And the progress at the second focus had been by no means rapid till the genius of Preyer made clear how one might study children scientifically, and proved that it could be done, by doing it. Since then it has spread in proportion to its natural fascination and importance.

"To the interrelations of these focal points of knowledge with other sciences, and to the problems which lie adjacent to them, we are, according to the plans of the General Committee, to give our

chief attention. By the happy choice of that committee we shall be addressed upon a subject suggested by the first of these topics by Principal C. Lloyd Morgan of University College, Bristol, *the psychologist of the animal mind for all of English tongue*. On the other topic we shall listen to Professor Mary Whiton Calkins of Wellesley College, whose demonstrated balance of judgment and critical insight amply justify her selection to outline present problems, while in her own person she represents for us the source from which in the end we shall probably get our fullest and most reliable data of human psychogenesis, — the sympathetic and yet scientifically faithful observations of sisters, aunts, and mothers. In those also who have consented to make the briefer addresses of the occasion we have those who will speak with authority upon the matters with which they deal.

“I wish very briefly to point out the importance, as it seems to me, of still another plot within, or closely adjacent to, our general field, which ought well to repay cultivation. I refer to the study of the mentally deficient — not at all from a pathological point of view, but from that of comparative and genetic psychology.

“Philanthropy has been interested in such cases now for many years, and an enormous literature has accumulated with regard to the practical questions of their housing, feeding, care, and education, and upon the medical, anatomical, and etiological aspects of them as medical cases, but only here and there has an investigator tried to gather something definite with regard to their psychological condition; and in doing so very few have made use of anything like systematic observation or experimentation. There has, no doubt, been abundant reason for this, but the time has come, I believe, when something more may be undertaken with advantage alike to the special department of applied knowledge upon which their care and treatment rests and to psychology in general.

“Where in the world can we expect to find a better control for the stages of human development as we have worked them out in normal human children than in these infinitely graded cases of arrest, — even if the arrest is not by any means a simple persistent *status quo*? The normal child is fluid, exposed to, and deflected by, a thousand incalculable influences, whereas the defective child is by his very defect put into simpler and more permanent and more calculable relations. Most mothers would surely resent an argument that sought to prove that their babies are now idiotic, because they would inevitably turn out to be idiots if they should halt in their course of daily development; and the mothers would be right; but there is enough resemblance between the conditions to make cross-reference illuminating.

"But this is not all. The idiot and the feeble-minded ought to offer us the best possible means of getting at that all-important framework of later development, — the original stock of innate tendencies, emotional, impulsive, reflex, with which the human being comes into the world, and into which he fits his earliest experiences. Here we should be able to discover the nature and characteristics of that "going concern" in which, in Principal Morgan's phrase, every young mind finds itself a partner when it first comes to a realization of itself. Complicated and overgrown by experience and training these tendencies surely are, even in defectives, but not so complicated and not so overgrown as in the normal individual.

Or where, again, could we hope to find a better opportunity to study in unsophisticated purity the broad and general expressive movements of face and members — the mimetic and other movements in which Wundt sees the foundation of language, and Lipps the germ of much of our esthetic comprehension?

The methods of attack must resemble in a considerable degree the simple ones of animal psychology and child-study, — observation of spontaneous activities and simple experiments. The imbecile cannot become the subject of any difficult or delicate tests. But on the other hand, he can command a few words, and can now and then answer a simple question comprehendingly. And here, as in all cases where we deal with the human subject, our anthropomorphizing tendencies, though still to be kept in restraint, have a larger justification in the facts than in the study of animal forms far remote from man. It may reasonably be assumed that what psychic life an idiot or imbecile may have is more like our own psychic life in its simpler expressions than anything else in the world, and that, if comparative psychologizing is anywhere justifiable, it is here.

Let me not give the impression that I think this field could be cultivated without difficulty, — that there are nuggets lying about on its surface for any one to pick up, if you will let me change my figure a little. Far from it; the field has been looked over already; what can be picked up easily has for the most part been picked up. It has also difficulties of its own, but not insuperable ones. All that I desire now is to point out clearly that this is really a portion of our field of comparative and genetic psychology, and a promising one, — one that, when we meet in future congresses, may possibly have an independent place upon the programme.

THE RELATIONS OF COMPARATIVE AND GENETIC PSYCHOLOGY TO OTHER BRANCHES OF SCIENCE

BY CONWY LLOYD MORGAN

[Conwy Lloyd Morgan, Principal of University College, Bristol, England, since 1887. b. London, February 6, 1852. Educated at Royal College of Science (Duke of Cornwall scholar, Murchison Medalist, De la Bêche Medalist and Associate in Mining). Lecturer in English and Physical Science, Diocesan College, near Capetown, 1878-84; Professor of Geology, University College, Bristol, 1884-1901; Professor of Psychology, *ibid.* 1901. F.R.S. L.L.D (Aberdeen). Author of *Animal Biology*; *Animal Life and Intelligence*; *Introduction to Comparative Psychology*; *Psychology for Teachers*; *Habit and Instinct*; *Animal Behaviour*.]

THE central purpose of this Congress is the unification of knowledge, and the discussion of those general principles and fundamental conceptions which underlie the related problems of allied sciences. Now comparative and genetic psychology takes its place between biology, on the one hand, with its doctrine of variation and elimination, with its organic values in terms of survival, and, on the other hand, such normative sciences as ethics and esthetics, with their doctrines of worth for the ideal life of man. In any case the starting-point is in close touch with purely biological reactions, and the goal is our systems of knowledge and our ethical conceptions. And the fundamental principle underlying and giving unity to these departments of study, in their genetic and strictly scientific aspect, is evolution.

It may be well at the outset to state that the province of comparative and genetic psychology, as I conceive it, is to investigate the nature and mode of development of mental processes, dealing with them in their synthetic rather than their analytic aspect, at any rate employing the methods of comparison and analysis with a predominantly synthetic aim and in such wise as to enable us to reach general principles which may be applied to the elucidation of particular cases. Incidentally it may have occasion to classify mental products, to distinguish and group certain modes of instinctive behavior, to mark off from each other sundry types of association, and so forth; but it only does so in strict subservience to its central aim and object. That aim is explanatory rather than descriptive. Every piece of comparative and genetic work should be so planned as to contribute something to the establishment or the support of the principles of psychology. It should add fresh ideas to the ideal construction of the science. Only on these terms can we claim, and shall we receive, the cordial recognition of those who are working in other fields of psychological research — on these terms, and, as a matter of course, on those of constant and

faithful appeal to the facts of observation and a rigid adherence to the canons of scientific interpretation. If we undertake our work in this spirit and with no narrower aim, the whole psychological brotherhood will gladly admit that such research is indispensable and of lasting value. In any case it should be our aim, in this section, to contribute to the basal principles of psychology by employing comprehensively the comparative method, and by special inquiries in the field of development and evolution.

My own studies, as some of my hearers may know, have lain in close relation to certain aspects of biological investigation, and I may perhaps assume that I shall be expected to respond to the honor done me by the invitation to speak on this occasion, by indicating in broad outlines some of the conclusions to which I have been led in so far as they bear upon psychological genesis. If, then, I be asked to give expression to one or two of the most salient points which strike one who approaches psychology from the biological side as of cardinal importance, I should perhaps place first and foremost as genetically fundamental the way in which, in the lower ranges of mental development and evolution, everything hinges on practical behavior and activity. Psychological process is indeed a middle term between the results of complex stimuli from the environment on the one hand, and the results of complex reactions to that environment on the other hand. But in the earlier stages of genetic process this middle term is wholly subservient to the practical needs of an eminently active and practical life. It does not attain a position of relative independence. It is never divorced from its natural outcome in behavior. It does not assume that peculiar, and, from the purely biological standpoint, abnormal preëminence which it is apt to assume in the treatment of a predominantly intellectualist psychology of the earlier school founded mainly on the mental processes and products of philosophers and sages.

A second point which comparative and genetic study brings out with almost equal clearness is the complexity of the biological foundations on which the beginnings of the psychology of the individual are laid, and the consequent fact that, in individual genesis, the initial data are already grouped wholes and not sporadic and isolated sensation-elements. One of the problems which the earlier psychology essayed to solve is by what process of coalescence and elaboration isolated sensations could build themselves up into the complex wholes of perception and how these could relate themselves with the similarly-built complex wholes presented to consciousness when active movements were carried out. It assumed that the several sensations which may be distinguished through the application of a difficult and prolonged process of

analysis and abstraction were independent psychological units separately given, and sought to render an account of the manner in which these mental elements threaded themselves on the strands of association. A biological treatment has more and more clearly tended to emphasize the fact that the individual organism comes into the world as a going concern, the recipient of groups of stimuli giving psychological net-results, on the one hand, and capable, on the other hand, on purely organic grounds, of complex modes of behavior which supply also their net results, the two sets of net results coalescing so as to constitute felt unity-wholes. It has thus tended to relegate many of the problems of mental ontogenesis to biology, and has come to regard association itself as in large degree dependent on factors which are primarily organic and physiological.

If this be so, the starting-point of genetic study lies in the borderland region where distinctively biological evolution passes up into, and is increasingly influenced by, psychological development. And for this reason many observers have selected the phenomena of instinct as most likely to throw light upon some of the lower phases of psychogenesis.

From the phylogenetic point of view we are at present, I fear, very much in the dark as to the earliest stages in the evolution of effective consciousness as capable of exercising, in association with its physiological concomitants, guidance in the course of behavior. By effective consciousness I mean that which does, in some way, control organic activities. The only criterion we have of its presence is the observable fact that the organism profits by individual experience. It is, I admit, a difficult criterion to apply. But I confess that I am disposed to regard the introduction of consciousness into an ideal scheme of explanation without the application of some such criterion—the introduction it would sometimes seem of a sort of consciousness which is not a mode of experience—as a bit of mythology, which is harmful rather than helpful. Of effective consciousness, however, having demonstrably a guiding value, there is no evidence in plants. Dr. Jennings finds little or no sign of it in the lower Infusoria; nor can Dr. Yerkes find much or any proof of its presence in the Medusa. This is the region of tropisms and chemism and the like. Just when and how effective consciousness first comes into play we are, as yet, scarcely in a position to determine. Hence the problem has to be attacked in the main ontogenetically, by considering the connection between automatic behavior and that which affords evidence of conscious control, in organisms which exhibit both, each in relation to the other.

If there is one feature which is essentially characteristic of the

popular conception of the influence of mind in the conduct of affairs, it is that effective consciousness is a controlling influence standing in some way apart from the organic happenings over which its control is exercised. Is this popular conception wholly without scientific foundation and erroneous, as some physiologists would assure us? Take any simple case of accommodation to circumstances through a modification of behavior due to pleasurable or painful experience in like cases, — let us say the avoidance of nauseous insects by young birds, — or any other example of the intelligent control of instinctive procedure. Can we conceive how the feeling-tone, as the concomitant of nervous processes involved in the instinctive procedure as such, could modify the direction of the discharge — could either augment or inhibit it. I for one am completely incapable of doing so. Reduce what we may suppose to take place to the simplest schematic form. A stimulus excites a nerve-centre and the excited nerve-centre distributes a response. I am utterly unable to see how any conscious concomitant of the physiological action of that nerve-centre, *per se*, can in any way influence the response. Something must be added which in some way influences the discharge; and this is what we term experience, embodied in other nerve-centres, or in parts differentiated from the automatic centres.

It seems to me, therefore, that we are inevitably forced to assume that the physiological foundation of conscious guidance is, in organisms possessed of a nervous system, a differentiation of control-centres from the centres concerned in automatic response; and that the ascent of mind is the concomitant of the evolution of a differentiated control-system which, during individual life, is constantly playing down upon the system which is concerned in merely organic reflex acts biologically coördinated as instinctive procedure. It is between these two systems, thus differentiated, that interaction takes place.

According to this conception the control-system plays the part of environment to the automatic system which is the physiological mechanism for purely organic adjustment; and this harmonizes with the popular conception of mind as a selective environment. And the characteristic of this environment is that it includes, as modes of experience, on the one hand the surrounding life-circumstances, and on the other hand the responsive organic activities, and brings them into those relationships which we term psychological values. It is this controlling environment which is constantly influencing the course of procedure due to the hereditary modes of response of the automatic centres.

I am well aware that this conception of an environment within the organism itself runs counter to established usage of the term.

It will be said that the word implies those external conditions to which the organism as a whole is adapted through heredity or accommodated through acquired modifications of structure or function. It will be urged that it is this external environment with which the control-system is in relation, and that the suggestion I put forward involves an unwarrantable departure from all the recognized canons of biological interpretation. And yet, having all this in view, I venture to put forward the conception in the interests of psychological interpretation. There is not time now adequately to discuss it, even were this the appropriate occasion; only the salient features can be indicated and that very briefly. The determining conditions of psychologically-guided or intelligent behavior, as distinguished from responses which are purely automatic, are what we sum up under the term experience. It is commonly said that this experience is that which stands for, or represents, or symbolizes the environment. I wish to suggest that it is the psychological environment under the influence of which automatic responses and instinctive modes of procedure are modified, and that in all cases it includes more than the actual presentations of the environment as that term is used by the biologist. It includes the meaning which that environment has acquired. A chick that has had some acquaintance with the nature of wasps inhibits the instinctive tendency to pick at one when it is presented to sight. That and that alone is the presentation of the external environment at the moment when inhibition is brought into play. That and that alone is not the determining factor in the intelligent avoidance of the insect. This controlling factor is the meaning within experience which the presentation suggests. It may be said that what is suggested is a potentiality of the external environment. But the controlling influence of potentialities is hardly a satisfactory conception. What is actually present then and there is the experience, modifying the output of automatic response. This is to be regarded, according to the suggestion I put forward, as the psychological environment. But it is physiologically embodied in the control-system which is the actually present material environment under which the further functioning of the automatic centres is conditioned in intelligent behavior. The essential points, then, are these: (1) Experience, in so far as it controls behavior, may be regarded as the environment which supplies the conditions of guidance; (2) what the biologist terms the environment is a product of experience; (3) for the physiologist, experience must be translated into its neural concomitants in the control-system; (4) hence, if, psychologically, experience may be regarded as a conditioning environment, then, physiologically, the control-system, as its organic embodiment, may be so regarded.

Now there are diversities of opinion as to the range which should be included under a definition of instinct as contrasted with intelligence, and there are diversities of opinion as to the relations of the one to the other in genetic process, especially as to how far the modifications of behavior produced through the exercise of environing intelligence are directly inherited as variations of instinctive endowment. I do not propose to discuss the *pros* and *cons* of that difficult subject the inheritance of acquired characters. It suffices to say that in accordance with an hypothesis, in the development of which I am proud to be associated with Prof. Mark Baldwin and Prof. Henry F. Osborn, intelligent modification of behavior, if it be not the mother of congenital variations of hereditary instinct, may none the less be regarded as their fostering nurse.

This is not the occasion, however, on which to discuss diversities of opinion or indeed to enter, in any detail, into the more distinctively biological aspect of the study of instinct. From our point of view the essential feature of instinctive procedure lies in the fact that the behavior thus characterized is on its initial occurrence prior to and independent of individual experience. It wholly depends, as such, upon how the automatic centres have been built through heredity. And from the standpoint of genetic psychology it appears to me that the really important contribution which the study of instinct offers for our consideration is this: that in any given case of hereditary behavior what we may term an instinctive situation is presented to consciousness, as, ontogenetically, a primary unit-complex of experience, and that, as such, it is developed independently of any guidance in terms of experience. By the situation as presented to the environing consciousness I understand the whole of the initial stimulation, including both external and internal factors, the net results of the behavior as the situation develops, and the satisfaction or dissatisfaction which is attached thereto. We, as psychologists, analyze the instinctive situation. But I conceive that it is presented to consciousness as one developing whole. And the mode of its development is an organic legacy; it is essentially a flow of physiological process in the automatic centres; but it entails a flow of consciousness in the environing control-centres; and this flow of consciousness in its entirety, within a given situation, I am disposed to regard as a primary datum in ontogenetic development.

This thesis, which I purposely express in a somewhat extreme form for the sake of emphasis, involves a protest, I do not say against a too analytic treatment of the early phases of mental process (for it is our function to analyze and compare), but against the assumption that the products of our analysis are, psychologically considered, genetic units. We sometimes fail to realize to how great

an extent we are apt to become the slaves of the disintegrating tendencies of scientific procedure. Because we can break up a situation into what we call its constituent elements, we think that they are separately felt elements in the primary experience. I do not think that this is the case. I regard it as much more probable that the developing situation is collectively felt as it is unfolded; and that complex wholes, biologically integrated, rather than constituent elements, analytically disintegrated, are for ontogenetic treatment the primary data.

On this view, then, instinctive procedure presents to the environing consciousness, embodied in the control-system, ready-made situations. And, on the subsequent occurrence of like situations, under substantially similar circumstances, these are dealt with in accordance with the meaning which their predecessors had acquired.

One cannot, however, too strongly emphasize the fact that, in passing from biological responses and reactions, to conscious behavior founded on experience, we introduce a wholly new order of values — values not in terms of organic survival but in terms of feeling-tone. The two sets of values are so often and, of necessity, so predominantly consonant — their interrelations are so many and so close — that we are apt to forget that they are radically distinct. Physiology, as such, knows nothing whatever of that order of pleasure-pain values, which for us, as psychologists, are essential. They form no part of the ideal construction of physiology: they are dominant factors in the ideal construction of psychology.

And it is here, just where the strictly biological and the distinctly psychological factors begin to interact, that the difficulties of analysis make themselves felt. I have distinguished between the automatic system, the functioning of which is determined entirely by biological values in terms of survival; and the control-system, the functioning of which in its psychological aspect is determined entirely by a different order of values in terms of feeling-tone. The outcome of the one is instinctive behavior; the outcome of the other is intelligent behavior. But both are dependent on heredity. And it is therefore, I think, essential to distinguish, in our ideal construction, between two orders of heredity: first, that which obtains within the automatic system and which thus determines the nature of the hereditary responses; secondly, that which obtains within the control-system and which thus determines the nature of the hereditary likes and dislikes. For analysis these are independent each within its appropriate sphere; but they are developed within the same organism in close synthetic relationship.

At the outset of ontogenetic development instinctive and automatic responses are due to the purely biological order of heredity; but their results are reflected in the conscious environment and

therein are subject to the psychological order of heredity, so that the controlling influence of the environment is determined by feeling-tone and values for conscious experience. If then we speak of the development of a situation in conformity with the satisfaction it affords, as in accordance with the psychological end, and its development in conformity with the preservation and conservation of the race as in accordance with the biological end, the salient fact is that the two ends are consonant. This has, of course, been fully recognized by evolutionists from Herbert Spencer onwards. I will not here lay stress upon the noteworthy fact, which has not, I think, been sufficiently recognized by the Lamareckian school of evolutionists, that this consonance of biological and psychological end, is admitted to be the outcome of the survival of those in which the consonance obtained, and the elimination of those in which it was absent — that is to say is admitted to be dependent on natural selection. I would rather lay stress upon the fact that this consonance affords a striking link of continuity between the more distinctively biological and the more distinctively psychological factors of the genetic process.

The relation between the two has been well brought out in Professor Groos's discussion of the so-called play of animals. Indeed such play admirably illustrates the twofold influence of heredity; for on the one hand, it is founded on unquestionably instinctive modes of behavior; and on the other hand, it not less obviously appeals to an innate sense of satisfaction. Why do animals begin to play and keep on playing? From the psychological point of view because they like it: from the biological point of view because they thus gain practice and preparation for the serious business of their after-life. But why do they like it? Because under natural selection, those who did not like it, and therefore did not undergo the preparatory training and discipline of play, proved unfit for life's sterner struggle, and have been therefore eliminated. I have contended that inherited modes of behavior present to consciousness ready-made situations which develop automatically on biological lines, and that the rôle of environing intelligence is to lead to modifications in their redevelopment in accordance with their psychological values. I have also called to remembrance the fact that in the animal world, under normal conditions, these psychological values with their appeal to feeling are consonant with biological values in terms of survival. Throughout the course of mental development, in the perceptual sphere, there is a constant interaction between the two factors broadly classed under the heads, "instinct" and "intelligence." And it is the province of detailed study to assess at their true value the rôles played by these two factors in the particular cases which fall under consideration. A biological survey

of the field discloses the fact that when the conditions of life are constant and uniform, the instinctive factor, subject to organic selection, predominates, and complex groups and trains of reflexes assume a stereotyped form. This is due to what we may term a biological coalescence of unit-situations into a coördinated whole. What we call the instinctive behavior of many of the insects, for example, seems to be the inherited grouping in biological sequence of inherited units of response. But in relation to more varied circumstances the intelligent factor predominates. The hereditary unit-situations may not be fewer, may indeed be more numerous. But the manner of their coalescence and coördination is rather psychological than biological. The higher animals exhibit an intelligent plasticity which enables them to meet the requirements of the more complex surroundings into which their life has risen, and which is reflected or symbolized by the psychological environment. Here a stereotyped coördination of the hereditary units of behavior would be rather a hindrance than an advantage. The winning animal in life's struggle would be the one in which behavior was most rapidly and most surely modified to meet particular needs — the one in which the teachings of experience were most promptly used in effective action. The inevitable tendency of the evolution of intelligence must be the disintegration of stereotyped modes of behavior as biologically coördinated wholes and the dissolution of instinctive complexes into relatively independent instinct-units which would be thus free to coalesce into new groups under the guidance of experience. Thus it is that in the more highly developed animals and in the human subject the instinctive units assume rather the form of a number of congenital tendencies or propensities than of instinctively coördinated wholes of behavior, the former being less stereotyped than the latter. And thus it is that in them there is a shorter or longer period of inefficiency during which the inherited unit-situations are coördinated psychologically in new groups under the influence of individual experience as a shaping environment.

Throughout the whole range of perceptual development under these conditions there is progressive integration and differentiation of the unit-situations, always on essentially practical lines, always in closest touch with active behavior. Even perception itself, as genetic psychology has helped us more fully to realize, is dependent on acquired habits of action. Perceptual meaning and value are ever dependent on some activity directed toward that which is so perceived. All differentiations within the presented situations are due to the call for some directed behavior, are due to the demand for some focusing of active manipulation. Thus is the mouse differentiated for the practical interests of the kitten. And all integration of diverse situations is due to their

assimilation in terms of like modes of behavior in dealing with them, in terms of the similar responses which they evoke. Thus there is an integration of the situations of so-called play and earnest. But in perceptual process, far as differentiation may be carried, it never reaches the stage of intentional analysis; and, far as integration through assimilation may be carried, it never reaches the level of intentional generalization. These are the results of ideational process.

It will be noticed that I here lay marked stress on the distinction between perceptual and ideational process. I said at the outset that comparative and genetic psychology takes its place between biology on the one hand, with its doctrine of values for organic survival, and, on the other hand, such normative sciences as ethics and esthetics, with their doctrines of worth for the ideal life of man. It appears to me that in the relation of biology to psychology the essential point is to grasp the analytic distinction between the instinctive and intelligent factors, and I have therefore so far mainly dealt with this distinction. But it also appears to me that in the relations of psychology to normative science, the equally essential point is to grasp the distinction between perceptual and ideational process. In the study of the higher ranges of animal psychology and of child-life this distinction has scarcely yet received adequate emphasis.

The study of the mental processes of the higher animals has of late years passed into a new phase. In the first place, it is now realized that, so far from being easy, it is full of peculiar difficulties and beset with special snares which entrap the unwary interpreter. In the second place, it is generally admitted that adequate training is required to enable an observer, no matter how accurate and faithful his record of facts may be, to diagnose inferentially the psychological conditions of which the facts themselves are significant. And in the third place, it is recognized that far more is to be gained by the systematic study of the doings of animals under controlled conditions and in test cases, than by the casual observations of credible but often uncritical witnesses. The new phase of the study of animal intelligence is thus characterized by experimental research in the hands of those who are trained psychologists, and who are fully aware of the difficulty and delicacy of the task which they undertake.

We must remember that in the early days of Darwinism, the first business of those who sought to place the conception of mental evolution on a secure basis was to establish the basal principle of continuity in the series of mental products; to show that in animals are to be found the germs of all the higher endowments of man; and to abolish all such radical distinctions in kind as were

then held to form an impassable gulf between the brute beasts and man with his spiritual capacities. This tendency, which was inevitable as a stage in the progress of thought, led to the utmost widening of the limits within which psychological terms, such as "inference," "abstraction," "generalization," and "reasoning" were used; the extension being designed so as to render these terms as comprehensive as possible and to enable them to cover not only fully differentiated processes but the earlier — even the embryonic — stages of their development. But when the conception of evolution had won its way to acceptance, when the principle of continuity had taken its place as part of the recognized scheme of scientific interpretation, the emphasis of thought changed from the evolutionary curve as a whole, now freely and fully accepted as continuous, to the differentiated stages which could analytically be distinguished therein. They were applied again in more restricted senses; the restriction being designed to render them distinctively applicable to certain higher phases of differentiation within an admittedly continuous process.

In any case it is necessary to bear in mind the fact (of which I have suggested the probable cause) that the same terms are applied by different authors with wide differences of limitation — by some in a more extended and by others in a more restricted sense. From this it follows that some at least of the divergences of interpretation in the comparative psychology of animals are more apparent than real.

The influence of the terms we employ, closely connected as it is with our early training, is often deep and abiding. It has been a special merit of Dr. Stout's treatment of psychological topics that he has emphasized, so clearly and in so many ways, the fundamental distinction, as I conceive it to be, between perceptual and ideational process. As he himself has pointed out, one of the great difficulties in the way of its general acceptance, is due to the fact that the existing terminology grew up at a time previous to any serious attempt to render clear the distinction. Some of my hearers may remember the almost pathetic words in which Dr. Stout laments the misleading influence of the terms we are at present almost forced to employ. If I may be allowed slightly to modify his statement without, as I believe, introducing anything foreign to his thought, his contention is that "human language is especially constructed to describe the mental processes of human beings [in ideational terms], and this means that it is especially constructed so as to mislead us when we attempt to describe the workings of minds which differ in any great degree from the human," and even the workings of our own minds on the perceptual plane. "A horse, having had a feed at a certain place one day, stops of his own accord

at that place on a second journey. People say that it remembers being fed here before, and infers that it will be fed here again. In all probability these words with their human implications [on the ideational plane] are quite misleading. Suppose that the master of the horse is a bibulous person, who takes a drink as a matter of course whenever he comes to a public-house on the road. In order to do this he need not go through the process of remembering that he has had a drink at a public-house before, or of inferring that he can have a drink at a public-house again. He simply has a bias to stop at a public-house whenever he comes to one. Probably the horse's act implies just as little of remembering or inferring."

It will be noticed that the difficulty which Dr. Stout indicates, does not apply only to the mental processes of the horse, but also to some at least of those which are characteristic of his bibulous master. No doubt, taking men and women as we find them, there is the closest interaction between ideational and perceptual process, just as there is between instinctive and intelligent procedure. But there is, I conceive, an analogous relation. Just as the instinctive factor provides data which intelligence deals with so as to shape it to more adaptive ends, so does the perceptual factor provide the more complex data which, through ideational process, are raised to a yet higher level in rational conduct. And in both cases notwithstanding, nay largely in consequence of, the closeness of the interaction, it is the business of analysis to distinguish with the utmost clearness the essential features of the constituent factors.

I take it that the leading characteristic of perceptual process is the dealing with situations as wholes in their unanalyzed entirety. When the integration of which I have spoken has been carried far, any relatively new situation is assimilated to the past experience gained in similar situations wherein certain salient features have been differentiated through their intimate relation to practical activities. The associations thus begotten are not associations between separate ideas, but in every case essentially between the situation and the practical behavior it calls forth. Even this expression savors too much of analysis. Let us rather say that the type of association distinctive of perceptual process is that between an early phase of a situation and the succeeding phase, so that what is suggested in any given case is a mode of development of the situation as a whole through practical behavior. That is the essential feature of the doctrine of meaning in perceptual process. It is meaning in terms of a specific development of the situation as a whole; it is meaning closely bound up with a felt impulse to act in a certain way; it is the meaning which attaches to the public-house as the result of practical experience on the part of the horse and of his bibulous master.

Now, it appears to me that recent researches all point to the fact that the mental processes of animals are mainly — I do not say entirely, though I myself still incline to that opinion — but at all events mainly, on the perceptual plane. They tend to show that animals, even the monkeys, deal with situations as complex unity-wholes. The method of learning is chiefly dependent on practical behavior which, carried out with varied and persistent — often restless — activity, leads the animal unsystematically to stumble on new associations between such behavior and the situation within which it arises. But it also appears to me that a very large proportion of human process is predominantly upon the perceptual plane. I say “predominantly” because even this section of human activity is inevitably influenced by the ideational section which is superinduced thereon. And there is, I repeat, no little difficulty in determining its range, as perceptual, just because our psychological language almost necessarily leads us to describe it in ideational terms — the terms begotten of comparison, analysis, and synthesis.

It is through such steps, and such steps alone, that, upon the basis of perceptual experience, systems of knowledge can be built. This is the product of ideational process. It involves an ideal or schematic construction. And when situations are viewed from the standpoint of a system of knowledge their salient features have not only meaning for practical behavior, but also significance in relation to that system. They are apperceived as particular examples which illustrate some general scheme or principle. They are subject to the influence of a new environment. And it is here that psychology comes into touch with normative science. No doubt, normative science, as its name implies, deals with standards of reference — in ethics, for example, with standards of “ought.” But this is only an implication of the fact that the particular act is viewed in its relation to an ethical scheme of conduct. Impulses arise within the situations as they occur and as they are dealt with in and for themselves. But motives, as the term is used in ethics, imply the relations between these several situations and a system of ideals. Only on the ideational plane do there emerge considerations looming up beyond the situations into a prudential, moral, or other scheme; behavior is thus raised to the level of conduct; and a situation is developed, not only in accordance with the impulse-value arising therein, but in accordance also, and in greater degree, with the motive-worth for a system.

One of the characteristics of ideational, as contrasted with perceptual reference, is, that, whereas in the latter the salient feature of the situation is always the centre of development, in the former the comparison is with independent centres, or an independent

scheme, to which many situations may be referred. This may be illustrated by the different attitude of the two types of process to relationships in the surrounding world. For perceptual process these relationships are not disentangled in analysis from the complex within which they are imbedded, nor are they synthetically rebuilt into new unity-wholes; but they are none the less contributory, within the complex, to practical behavior. Suppose one is shown into a strange room and deals with the situation in purely perceptual fashion. One assimilates the various impressions in terms of past experience. At any given moment some object — say the clock on the mantel-shelf — is in the focus of vision. The others are grouped around it in the margin of the visual field — the picture above, the fireplace below, the bookcase on one side, the cabinet on the other. These are the spatial relationships within the field for perceptual experience. But in and for the situation as such the centre of reference is always the focus of the field. It is a constantly shifting centre. As the eyes flit from object to object the focal impression changes again and again. And with each change the space-relations of other objects, more dimly seen in the margin of vision, are rearranged. But always for the situation itself, as contrasted with systematic knowledge, the centre of reference is the focus of vision (or other mode of perceptual experience) at the time being. It is an essentially practical centre. It *means* that so much movement of the eyes or hands or body as a whole, in this or that direction, will bring this or that impression, at present marginal, into the focus. Practically perceptual folk constantly tend to deal with a spatial situation in this way. They picture how they would act in the midst of it. Ask a farmer's lad whereabouts the church is in his native village. He will probably reply that as you leave the Blue Boar public-house (his focal point) you must first turn this way, then that way, and then go straight down the street till you get there. The distinguishing feature is that the spatial relationships which are disentangled in ideational process for the purposes of schematic construction and rebuilt in a conceptual scheme of three dimensions — a scheme independent of, but applicable to, particular situations — are, for experience on the perceptual plane, parts of a given complex, having meaning for practical behavior, but as yet no significance for systematic thought. They are not subject to the influence of an environment of ideational constructions.

For we are now in a position to extend the conception of conscious environment. Intelligence, in the perceptual sphere, embodying the coalescent representation of concrete situations, plays the part, as I suggested, of environment to the automatic responses. And this undergoes evolution to higher and higher levels in per-

ceptual process. But in ideational process there is superimposed a further environment, under the influence of which intelligent procedure is itself controlled. This higher environment is constituted by systems of knowledge, ideals of conduct, and artistic conceptions. Just as intelligence, fulfilling its function of environment, plays down upon organic procedure, shaping it to more perfect adjustment to the circumstances of perceptual life, so does reason, as environment, play down upon intelligent procedure, molding it to more perfect adjustment to the conditions of ideational life.

According to this conception, there are superimposed upon the pleasure-pain values in terms of feeling-tone, yet higher motive values of a new order in terms of logical, ethical, or esthetic worth. And if we attempt to translate this into physiological terms, not only is there a differentiation of a control-system from the automatic nerve-centres, there should also be a further differentiation within the control-system itself, yet higher intellectual centres being differentiated from those which are concerned in perceptual process.

There is, however, a further distinction which is important for the comprehension of the social influence of ideational process. Perceptual intelligence is, in the main, receptive and representative of a natural environment which takes form independently of the exercise of its influence. Only in a limited degree are its products in behavior so applied as to modify and enrich that natural environment. The beaver indeed constructs its dams, the bird builds its nest, the spider spins its web, and so forth. Some amount of choice of environment through subjective selection is possible. Some products of behavior are projected on to the plane of its organic or inorganic surroundings. But it is a characteristic feature of ideational process that it is constantly, in an indefinitely larger degree, embodying the products of its rational environment, as developed in consciousness, in concrete form, so as to constitute part of the physical and intellectual surroundings. Subjective selection is a most potent factor in human life. To an extent only foreshadowed in the animal world does man both create and select his own environment of circumstance. And this is the keynote of the higher human evolution as contrasted with that which obtains among the lower animals. It involves a transference of evolution from the organism to the social environment.

Now if the distinction between perceptual and ideational process is sound in principle, it is of fundamental importance in dealing with the higher ranges of psychological development. In any case, whether the subject be man or child, dog or monkey, it is our duty to devise such methods of observation as shall enable

us to apply these principles in such a way as to analyze out the two factors, supposing that both coexist. As I read the results of the recent researches of Dr. Kinnaman, Professor Thorndike, Mr. Hobhouse and others, on the intelligence of the primates, there seems however, but little evidence, even in them, of the schematic products of ideational construction. And the question arises whether such products are possible without language as an instrument of analysis and synthesis.

In attempting to deal, I fear very inadequately, with the subject committed to my charge, I have essayed to give a very broad and general survey of the genetic sequence. Starting with biological reactions and bringing these into touch with the early stages of intelligent guidance, the essential feature is the occurrence of a new order of values, those of feeling-tone in terms of pleasure-pain. So long as situations are dealt with naïvely in and for themselves, these values are the determining psychological factors, but always in close and vital relationships with the survival values of the biological mode of explanation. At some stage, however, of the evolutionary process a new order of values has its rise and origin — these are connected with ideal schemes and systems; and they are in terms of worth for the ideal life. Just as intelligence forms the environment under which automatic responses are guided to higher ends, so does some sort of rational system form the environment under which perceptual processes are controlled. Here we have the scientific foundations of ethics. But here too, important as these scientific foundations may be, many of us feel that they are insufficient; and we are thus brought into close relations with those metaphysical postulates which are outside the sphere of comparative and genetic psychology, *quâ* science — with relations which no doubt have been or will be discussed in another section of this comprehensive Congress of Arts and Science.

THE LIMITS OF GENETIC AND OF COMPARATIVE PSYCHOLOGY

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As a mere student of general and of adult psychology, and no first-hand investigator of the consciousness of animals, little children, and primitive men, I have no especial right to treat of this topic. I have been induced to do so by the conviction that comparative and genetic psychology, even more than other branches of the science, urgently need to-day a fresh survey of their boundaries, a definite formulation of their basal conceptions.

For such a critical consideration of fundamental problems, the general psychologist has, perhaps, a peculiar fitness. He may not, it is true, penetrate, as the specialist can, into the thicket of the phenomena of animal behavior, infant activity, and primitive customs, but he may yet avoid the specialist's danger of failing to see the forest for the trees, of entangling general considerations with irrelevant details.

The terms "genetic" and "comparative psychology" are commonly employed without discrimination.¹ This, however, is an unjustifiable confusion, for genetic psychology is a mixture of comparative, or inferential, with direct, or introspective, psychology. Its study of the consciousness of animals and of primitive men, and most of its studies of the child consciousness are, it is true, pursued by the indirect or comparative method, the comparison of their behavior and their bodily structure with the conduct and the structure of the normal human adult. But an introspective, yet genetic, study of successive phases of the conscious life of the adult may be made; and such a study, though genetic, obviously need not be comparative. The distinctive feature of genetic psychology is, in truth, not its method — that may be direct or indirect — but a certain character of its subject-matter. The material

¹ Cf. for an example of this frequent misuse, D. G. Brinton, *The Basis of Social Relations*, p. 3, in which he describes comparative psychology in terms applicable to genetic psychology only: "Its province," he says, "is to trace the evolution of human mental powers to their earlier phases in the inferior animals."

of a genetic science is anything in its development: whether it study life or consciousness, animal or child or adult, a genetic science studies this object as developing.

Logically antecedent to all special problems of genetic and of comparative psychology is the question of the scope, and, conversely, of the limits of each. These problems constitute the main subject of this paper. The first to be considered is:

I. *The Limits of Genetic Psychology*

At the very outset, genetic psychology is met by the challenge to its logical existence. The question is seriously raised whether there is any sense in which consciousness may be said to develop, whether, in other words, there is room for any genetic science of consciousness. It is evident, at once, that consciousness, conceived after the atomistic, Humian fashion, as a succession of phenomena or events, — a chain of ideas, in the widest sense of that word "idea," — cannot be said to develop. Development presupposes a unit of change, that is, some one reality which expands or narrows, grows or decays, and yet retains, throughout its change, a certain identity. The Humian, "linked-idea," conception of consciousness has, as its only unit of reality, the single idea, that is, state of consciousness; and the idea does not develop, since it exists for the moment only.¹ Thus, the Humian conception, since it recognizes no reality which underlies that of these evanescent states of consciousness, leaves no room to conceive of consciousness as developing. Consistent advocates of this system² rightly, therefore, reject the conception of a strictly genetic psychology. They concern themselves, it is true, with genetic biology, in the effort to explain concrete psychic phenomena, explaining, for example, the fear of empty spaces by the fact that empty spaces were dangerous to our animal ancestors, and that therefore those of them who escaped, through instinctive flight, survived to propagate offspring. This, however, is no genetic psychology; it is a psychological use of the facts of genetic biology. Psychology, as study of succeeding states or processes of consciousness, is not, and may not become, a genetic science.

A genetic psychology is possible, in truth, only on a radically different view of the nature of consciousness. According to this second doctrine, consciousness is not a mere succession of ideas: it is a self conscious of itself, of other selves, and of its own ideas. The unit of psychology is, from this standpoint, not the single state of consciousness, the idea, but the conscious self. This is not the time

¹ *Treatise on Human Nature*, bk. I, part iv, sec. 6.

² Cf. Münsterberg, *Grundzüge*, chapter xiii.

in which to expand this conception and to distinguish it sharply from the metaphysical doctrine of the self with which it is too often confused. It is essential, however, to suggest the justification for such a conception of consciousness. The ground for the doctrine is, simply, this: Introspection discloses that every state of consciousness is immediately known as the state, or idea, of some self. Thus, consciousness of any idea involves also the consciousness of a self, conscious of this idea. On direct introspection, therefore, not on philosophical demonstration, this conception of consciousness is based.¹

It seems evident that a self, thus conceived, does undergo a development which is psychic and not physiological. The progress from infancy to maturity, or the advance from the savage through the barbaric, to the civilized epoch of human life, illustrates what is meant by self-development, a change which is correlated with physiological processes, but is surely not identical with them.² My ten-year-old self, shrinking with a terror which I still revive from a new face, and my present self which welcomes every stranger with a genial interest, are related by an identity and a difference. I am the same self — the childish terror still is realized as mine — and yet I am another self with a new attitude to the world. In just this progressive reconciliation of sameness and difference, self-development consists.

To psychic development, thus conceived, as characteristic of a self in its relations, there is not of course the decisive difficulty which faces the theory of psychic development, when consciousness is looked upon as series of ideas. An idea, a momentary psychic occurrence, lacks — as has been pointed out — the permanence which is necessary to a developing reality. A self, on the other hand, has both identity and permanence, and may therefore be conceived as growing and expanding. Yet the theory of self-development has its own characteristic obstacle: A self, it is urged, is not a temporal reality at all; on the other hand, time is the peculiar category of the idea-series, and a self must be regarded without reference to temporal realities. Only in its connection with its body is it necessarily considered as a past or present or future self: essentially it is the same self, in spite of these distinctions.³ And if this be true, the development conception may not be applied directly to a self.

It must be admitted that this difficulty has its roots in a just conception of the nature of a self. Selves are, in truth, primarily untemporal; and their basal relations are the untemporal ones of common experience, of sympathetic emotion, of self-assertion,

¹ Cf. the writer's *Introduction to Psychology*, chap. xii.

² Cf. E. C. Sanford, *Mental Growth and Decay*, *American Journal of Psychology*, vol. XIII, pp. 426 seq., 1902.

³ Münsterberg, *Grundzüge*, chap. iii (1) and (2); and Royce, *The World and the Individual*, *Gifford Lectures*, Second Series, III, vi.

and of loyalty¹ to others. It is therefore impossible to dispose of this objection to the theory of self-development, on the ground that it involves purely metaphysical considerations. For psychology, as well as metaphysical reflection, discloses this untemporal quality of conscious selves.

On the other hand, this difficulty cannot be admitted to be final. A scientific study of selves, in untemporal relation to each other, is indeed possible; but the temporal relation of selves to their own past and future, as well as to the temporal experience of other selves, must be admitted as a second possibility. For science is, after all, but a systematization of the every-day experience, and the facts of self-development are unquestionably matters of every-day observation. In other words, a self may be regarded, from the scientific as perhaps contrasted with the metaphysical point of view, now as temporal and again as untemporal; now as presenting a complexity of untemporal qualities and relations, again as presenting a succession of unfolding phases.

Genetic psychology, the study of developing selves, is therefore a legitimate science. This admission leads the way to a more precise definition of development. At the outset, it must be insisted that development, in the technical sense of evolutionary biology, cannot possibly be predicated of conscious selves. This will be admitted, when it is considered that heredity and natural selection are essential features of biological development. But it is simply impossible for one self to transmit its characters to another. Every self, on the other hand, has a certain independence and identity, which is quite incompatible with a transmission of characters. The traditional conception of psychic heredity, as set forth, for example, by Ribot,² is nothing more nor less than an empirical observation of the psychic likenesses between children and their parents.³ In this sense of mere similarity, psychic heredity is, of course, a fact. Such similarity does not, however, involve a transmission of mental characters. The conception of development, so far as it includes that of heredity, in this stricter sense, is applicable not to conscious selves but to animal bodies.

This ruling out of the factor of heredity sufficiently proves it impossible to conceive a self as developing in biological fashion. The position is strengthened by the reflection that natural selection, the preservation of certain individuals through the destruction of others, is altogether incompatible with one important tendency of psychic progress. This is the social tendency to protect and to help the weak. Every discussion of the doctrine of human evolution

¹ Cf. the writer's *An Introduction to Psychology*, chaps. xiv-xxi

² *L'Hérédité Psychologique*, 1902.

³ Cf. Ribot's virtual admission of this, *op. cit.*, p. 387.

emphasises this "failure of natural selection." Those who could not unaided, win in the struggle for existence, are cherished and protected, by parental care, by philanthropic effort, or by religious zeal, in opposition to the workings of natural selection.¹

Development, in its well-marked biological sense, is then impossible within the domain of related selves. It is important to reiterate this conclusion, in the face of the cheap and easy theories of transmission of traits, and of natural selection working in the sphere of social relations. But development is not necessarily conceived after the fashion of modern biology.² In a broad sense, development may be defined as the succession of the more complex upon the simpler states — or, conversely, of the simpler upon the more complex states — of a unitary being. Such a psychic development the normal adult self, who remembers his own past experience, may introspectively observe in himself.

Genetic psychology, thus conceived, is evidently in the first instance individual psychology: it is a study of the individual self — human or animal, child or adult — either in the process of learning, that is, in the progress from simple to complex consciousness, or in the reverse order from complex to simple. This learning-consciousness, as will later appear, is of two chief sorts: individual and social. That is to say, a developing self either profits mainly by its own experience, without realized relation to other selves; or it learns by its attitude, imitative or inventive, toward these other selves.³ Each of these basal forms of learning — individual and social — has, in turn, two subdivisions. The individual learning-consciousness either is mainly associative, or it involves analytic reasoning. And the social type of learning, by imitation and opposition, is distinguished as it refers to contemporary or to past selves. In the latter case, genetic psychology may indeed be called a race-psychology. The child imitates its parents, and the parents have learned by imitation of an earlier generation, each imitation involving an allied invention, a supplementing of the copy. Material for a genetic race-psychology is found thus, in the indirect dependence of an individual, through imitative and inventive consciousness, on other individuals who, from the time-standpoint, have preceded. Most of these distinctions will be illustrated, in the second section of this paper.⁴

¹ Cf. F. T. Headley, *Problems of Evolution*, pp. 282 seq., 334; L. T. Hobhouse, *Mind in Evolution*, chap. xiv, pp. 387 seq. and 395.

² Cf. Hobhouse, *op. cit.*, pp. 375 seq., 383, seq.

³ Cf. J. M. Baldwin, *Social and Ethical Interpretations*, chap. viii, sec. 4; J. Royce, *Psychological Review*, 1898, pp. 113 seq.

⁴ Genetic psychology must be sharply distinguished from the study of the psycho-physical organism in its development. The unit of this sort of development is neither psychical nor physical, but a compound of psychical and physical. In the current phrase, this compound is known as the psycho-physical organism: it is the body regarded as possessed of a soul, or self, or the self regarded as the

The foregoing pages have attempted to vindicate the existence of genetic psychology and to outline briefly both its scope and its limits. It will be necessary to discuss at greater length the second topic of this paper.

II. *The Limits of Comparative Psychology*

The bare existence of comparative psychology is nowadays called in question by no one. All psychologists admit that babies, primitive men, and some animals are conscious, and consequently grant the need of a science to study these forms of consciousness. The limits of comparative psychology are simply, therefore, limits in the application of its indirect method. Its initial problem may be formulated thus: what classes of animals and what stages of child-life and what levels of primitive life are conscious? To the consideration of this question, the remainder of this paper is chiefly devoted. For lack of time, the problems of ethnic psychology will be utterly neglected, and the main stress will fall on the facts of animal consciousness. The analysis of the consciousness of animals will be incidentally undertaken.

To determine what sorts of animals and what stages of the child-life are conscious, it is necessary to formulate some objective, or indirect, test of consciousness. Even if, as in common with many psychologists the speaker believes, the direct consciousness of other selves is involved in every self's consciousness of itself, such direct consciousness is evidently not present in the mere scientific study of animals, of babies, and of primitive men. That these organisms are conscious is not, under these conditions, directly or positively known: their consciousness is affirmed or denied by infer-

possessor of a body. The "question of genesis" is, from this point of view, as Baldwin says (*Development and Evolution*, pp. 8 and 10; chap. ix, sec. 3, p. 129) a question of "the development of mind and body taken together. . . . Changes in mind and body go on together and together they constitute the phenomenon. Both organism and mental states . . . may be appealed to in our endeavor to trace the psycho-physical order of events."

This conception of development as neither exclusively physical nor as exclusively mental, but as both at once, has its greatest significance in the fact that it introduces consciousness as an important factor in biological evolution. To be sure, widely different rôles are assigned to consciousness by different upholders of this general doctrine. But beneath these divergences is a fundamental agreement — the admission that consciousness, as such, plays a part in the development of the composite psycho-physical organism.

There are two grounds for refusing to regard this science of psycho-physical development as a genetic psychology. The first, advanced by those only who deny the truth of the interaction of mind and body, objects to the theory of psycho-physical development, that it implies not only the influence of physical on psychical, but conversely the influence of psychical on physical. The second objection, urged even by those who grant the possibility of interaction, consists in the assertion that a psycho-physical science would be biology and not psychology at all, a composite of physiology and psychology, in which psychology would play the subordinate rôle.

ence from structure, from behavior, or from product. A basis for this inference, that is, a test of the presence of consciousness, has, therefore, to be found.

There are two widely opposed doctrines concerning the nature of this test. The first of these may be called the continuity doctrine. In its unmodified and most consistent form, it ascribes consciousness to all living organisms, on the ground that life implies consciousness. In other words, the continuity theory interprets animal movements by their analogy with human conduct. Opposed to this doctrine is the mechanistic theory, which conceives of all plants and of the lower forms of animal life as mere mechanisms, on the ground of their unvaried and perpetually recurring reactions. The test of consciousness is, on this view, non-mechanical — that is, adaptive — behavior.

Upholders of the continuity theory have two arguments for their doctrine that consciousness is a property of animal life. The first is a metaphysical argument, based on that principle of continuity from which I have named the theory. Some animal organisms, it is argued, have consciousness, and the forms of animal life succeed so closely on each other that it is irrational to suppose the sudden appearance of consciousness at any one stage; hence it must have accompanied animal life from the first. The second argument is empirical, not metaphysical in character. It is based on a two-fold analogy of the animal with the human organism: the likeness of certain structures of animal bodies with those of human bodies, and — more important — the similarity of animal activities to movements consciously performed by human beings. This analogy is extended to the lowest forms of animal life. "The Infusory," Binet says, "guides itself while swimming about; it avoids obstacles; . . . its movements seem to be designed to effect an end. . . . In short, the act of locomotion, as seen in detached Infusoria, exhibits all the marks of voluntary movement."¹ After the same fashion are explained the movements of bacteria toward grains of chlorophyl in a drop of water which contains no oxygen,² the amœba's rejection of foreign substances,³ and the movements of animals higher in the scale of life — of echinoderms, for instance — from dark places into well-lighted ones.⁴

In all these cases, the underlying argument is the same: infusoria, bacteria, and amœbæ, echinoderms and higher animals perform acts like those which are voluntarily, or at any rate consciously, carried out by human beings; therefore, infusoria and the rest are conscious. The analogy is strengthened when to simi-

¹ *The Psychic Life of Micro-Organisms*, translation, Open Court Co., p. 46.

² *Ibid.* p. 32.

³ *Ibid.* p. 41.

⁴ G. H. Schneider, *Der thierische Wille*, chap. v, p. 164.

larity of conduct is added likeness of structure. So Binet¹ describes the ocular spot of a ciliated infusory, "composed of a convex crystalline humor, having the form of a watch-crystal enveloped by pigment," and concludes that the "identity of structure" with that of the eyes of higher animals "naturally leads to the assumption of the identity of functions."

An examination of these arguments discloses, however, certain flaws, of which the more significant are the following: In the first place, the law of continuity proves too much. If the sudden appearance of consciousness at any stage of organic development be irrational, so also is the sudden appearance of consciousness at any point of development — inorganic as well as organic. Consciousness must, in other words, be attributed to vegetable as well as to animal organisms, and must be claimed also, on this same principle, for inorganic matter: it must be attributed to the iron-filings attracted by the magnet, no less than to the infusoria attracted by the food.

The chief objection to the empirical argument of the continuity theory is less readily stated in a compact form. The argument, it will be remembered, rests on the analogy of such acts as the movements of bacteria to the light or the hiding of young gulls in the crevices of rocks, with corresponding acts of human beings, which — it is assumed — are consciously performed. But this assumption is obviously in fault, as far as individual human acts are concerned. Motions even more complicated — for example, the avoidance of obstacles in walking and the muscular contractions necessary to a musical performance — may be unconsciously performed by human beings; and the mere likeness with human movements cannot, then, prove animal actions to be conscious. To rescue the analogy, modern upholders of the continuity theory therefore make a further hypothesis. They admit that even complex human acts may be unconsciously performed, but they conceive all such acts as habitual, and they assume that all habitual movements were originally performed with consciousness and that they have grown unconscious with practice.² Many of these unconscious human movements may be traced back, it is shown, to consciously performed acts in the past life of the individual. Others, for example the characteristic bodily expressions of emotion, have remained unconscious throughout individual experience, but these, it is urged, were consciously performed by the animal ancestors of the human being: in a word, they have grown unconscious through racial experience.

¹ *Op. cit.*, p. 28.

² Cf. Spencer, *Principles of Psychology*, vol. II, part ix, chap. iv, pp. 546 seq.; Wundt, *Grundriss*, 6th edition, iv, sec. 19, p. 339; Schneider, *op. cit.*, v, pp. 150-155; E. B. Titchener, *Pop. Sci. Mo.*, vol. LX, pp. 465-467, 1902.

The complete argument, restated, in accordance with this fresh hypothesis is then the following: All animal activities are psychic because they resemble human activities, and all human activities are psychic, because they either are, or originally were, performed with consciousness.

But even in its new form the argument is invalid. In the first place, admitting its premises, it does not prove of any particular animal activities that they are conscious, but only that they once were conscious — perhaps not even in the experience of the individual. In the second place, the conception of unconsciousness, as attained through racial practice, involves the assumption that the effects of practice are transmitted, and has thus to reckon with all the formidable objections brought to bear against this revival of Lamarckianism. Finally, even if this difficulty be waived, the continuity argument loses all its force with the appeal to racial experience. For the strength of the argument lies in the analogy between animal behavior and directly observed human consciousness. When once, however, it is admitted that some human activities are and have remained unconscious through individual human experience, then the analogy becomes futile. To call the animal reactions psychic because analogous to human actions, when these human actions may be conceived as psychic only on the hypothesis that they once were consciously performed by the animal ancestors of human beings — this is an obviously circular argument.

The admission of this radical defect in the argument of the continuity theory leads naturally to a consideration of the teaching of the mechanists. This doctrine, it must be remembered, is less sweeping than the one which it opposes; for that asserts that all forms of animal life are conscious. The mechanists, on the other hand, are far from teaching that all animals are unconscious. They insist, however, that only those animals are conscious which behave in a non-mechanical way, those whose actions vary in such wise as progressively to adapt themselves to their environment. Negatively, then, the mechanists contend that those animals are unconscious whose movements are repeated and unvaried reflexes; and after this mechanical fashion they interpret many of the activities, which their opponents regard as psychical, notably the merely instinctive activities of animals.¹ Their argument also is twofold, theoretical and empirical. Against the metaphysical law of continuity, they array the logical law of parsimony, the

¹ This mechanistic theory must not be confounded with the utterly unjustified conception of consciousness as identical with nerve-process, which is current among certain modern physiologists — one may instance Loeb. (Cf. *Comparative Physiology of the Brain and Comparative Psychology*, pp. v, 12, 213.) This revival of the outworn doctrine of Vogt and Büchner is obviously a result of defective observation and of the unwarranted intrusion of a one-sided metaphysic into psychology.

alleged necessity of explaining every phenomenon in the simplest possible way. Now the physiological antecedent of a movement has always to be admitted, so that the introduction of consciousness as part-condition of a movement certainly adds a complicating factor. It follows on this principle of parsimony that any animal movement which can be explained as unconscious should be so explained, in other words, that the simplicity of the unconscious reflex conception gives it right of way.

The empirical argument of the mechanists, against the continuity theory, is in the main the development of a counter-analogy: the likeness of the supposedly purposive and conscious acts of animals with plant changes, and with mechanical processes. The argument has three distinguishable forms. In the first place, it has been experimentally demonstrated, by Loeb, Bethe, and others, that many animal activities which have been called psychic are, in reality, direct responses to mechanical, chemical, or electrical stimuli.¹ Even the home-seeking activity of ants, Bethe has shown, depends on the traces of food which has been dropped on the outward road. Bethe argues that the home-seeking is, therefore, an unconscious reaction to a chemical stimulus.²

It has been shown by the mechanists, in the second place, that instinctive animal activities, usually conceived as conscious on account of their purposive character,³ are persisted in when they have become useless, and even positively harmful. Loeb, for example, has experimented on the crevice-crawling instinct of animals,⁴ which is usually cited as an activity performed for the purpose of self-preservation, a movement to escape pursuit by seeking obscurity. Loeb, however, finds by ingenious experiments on butterflies and on worms, that the instinct persists when the crevice is brightly lighted, and therefore at least unsuited for a place of concealment. By similar experiments, Yerkes has shown that certain crustaceans persist in a hurtful instinctive activity;⁵ and Jennings has proved the same for several forms of infusoria.⁶

¹ Loeb lays great stress on the teaching that the nervous system, so far from being functionally distinct from protoplasm, merely "plays the part of a more sensitive and quicker conductor for the stimulus." This doctrine, though well established (cf. Loeb, *op. cit.*, pp. 4 *seq.*, 38 *et al.*, and *Der Heliotropismus der Thiere*, Würzburg, 1890, sec. 69, and p. 113; Goltz u. Ewald, *Pflüger's Arch.*, LXIII, p. 374, 1896; Schrader, *Pflüger's Arch.*, XLII, 1887, pp. 75 *seq.*, and XLIV, 1888, p. 175), has no direct bearing on the present discussion, except for those who start from the *a priori* conviction that nerve-excitation is an inevitable and theoretically necessary condition of consciousness.

² *Pflüger's Arch.*, LXX, pp. 15 *seq.*, 1898.

³ Cf. p. 724, below.

⁴ *Op. cit.*, pp. 184-185. Cf. *Der Heliotropismus der Thiere*, p. 1.

⁵ R. M. Yerkes, *Reaction of Entomostraca to Stimulation by Light*, ii, *Reactions of Daphnia and Cypris*, *Amer. Jour. of Physiology*, vol. iv, p. 419, 1900.

⁶ H. S. Jennings, *Studies on Reactions to Stimuli in Unicellular Organisms*, ii, *Amer. Jour. of Physiology*, vol. II, p. 330, 1899.

In the third place, the direct analogy is emphasized between animal instincts, on the one hand, and inorganic as well as vegetable processes, on the other. The upward crawling tendency of young caterpillars and the upward migrations of pelagic animals are mere mechanical responses, Loeb insists, "similar to that which forces the stem of the plant . . . to bend toward the source of light";¹ and the changes produced by electric currents in the postures of amblystoma are closely analogous to the phenomena observed in inorganic bodies under the influence of electric currents.²

A careful examination of these three arguments will disclose, however, that no one of them is an entirely decisive proof that instinctive activities are unconscious. To begin with the argument last stated: the likeness of instinctive animal reactions to inorganic processes stamps the animal reactions as non-psychic, only on the supposition that the inorganic movements are non-psychic. This assumption is, to be sure, commonly made; and it is made, in particular, by most of those who support the continuity hypothesis. By them, therefore, the logic of this argument from the analogy of animal with inorganic movements may not be challenged. Any one, who argues, "the echinoderm, like the human being, turns toward the light, and is, therefore conscious," cannot object, on formal grounds, to the counter-argument, "the nereid crawls into the lighted tube as inevitably as the needle turns to the pole, and is therefore unconscious." (From metaphysical considerations, on the other hand, this argument might well be assailed.) So far as the second of their empirical arguments is concerned, the mechanists are certainly right in insisting that actions which are mechanically repeated, even when useless or dangerous, are not purposive. Nevertheless this argument also falls short of its ulterior aims. Acts which are purposeless may well be conscious; and the caterpillars, worms, and butterflies may have the sense-consciousness of crawling, even without the purpose of self-preservation. So, also, the successful demonstration that animal reactions are direct responses to an external stimulus disproves the selectiveness or discrimination of animal reactions, but does not disprove their consciousness. Bethe's ants, for example, though incapable of finding their way home, by means of visual imagination, may none the less have been conscious of odor, as they followed the food dropped by the way. And, finally, the law of parsimony, the theoretical stronghold of the mechanist, cannot be admitted as a controlling consideration. It is true that, other things being equal, the simplest explanation is to be

¹ *Op. cit.*, p. 181. Cf. *Der Heliotropismus der Thiere*, pp. 74, 88, 109, 1890.

² *Ibid.*, p. 160. Cf. Loeb and Garrey, *Zur Theorie des Galvanotropismus*, in Pflüger's *Archiv*, LXVI, p. 41, 1896.

preferred, but no methodological test can be allowed to determine a question of fact; nor — in the opinion of the speaker — can it have the authority of a metaphysical principle. In other words, granting the equal significance of each in its own sphere, the methodological law of simplicity ought not to outweigh the metaphysical law of continuity.

Evidently, then, the mechanist does not make his point. He has tried to show that unvaried reflex movements are unconscious, but has succeeded only in proving that they may be unconscious, and that it is simplest to conceive them thus. His opponent, however, is not more successful. He has tried to prove that all animal activities are *ipso facto* conscious; but has shown merely that they may be conscious, and that there is a certain metaphysical support for this conclusion. With regard to organisms whose reactions are unvaried reflexes, it thus appears that neither doctrine is justified on purely scientific grounds. The one proves the possibility that these fixedly reacting animals may be conscious, but does not empirically disprove the possibility of their unconsciousness; and the other empirically proves the possibility that they are unconscious, but does not disprove the possibility of their consciousness.

It is, however, highly important to observe that this unsettled issue does not concern the animals which make adaptive movements. For even the mechanists are agreed that non-mechanical behavior, that is, adaptive reaction to a fixed environment, is a sufficient guarantee of the presence of consciousness. Verworn,¹ Bethe,² and Loeb³ unite in admitting this test of consciousness. "Es scheint mir," Bethe says, "der Nachweis ob ein Wesen im Stande ist modifiziert zu handeln, der einzige Prüfstein zu sein um auf psychische Qualitäten zu schliessen." It is therefore wise to waive the disputed question, does consciousness belong to animals whose reactions are mere fixed reflexes? and to ask, instead, the question, what animals meet that test of consciousness which is admitted by all, in other words, what animals make adaptive reactions? It is hardly necessary to remark that this argument from the occurrence of adaptive movements constitutes no absolute proof of the presence of consciousness, since the argument rests on a mere analogy. Yet the completeness of this analogy of the adaptive animal acts with conscious human movements and the utter absence of an analogy with mechanical processes combine to justify the conclusion that animals which act adaptively are conscious. Fortified by the metaphysical argument from con-

¹ *Protisten-Studien*, pp. 137, 141.

² *Op. cit.*, Pflüger's *Archiv*, LXX, p. 19.

³ *Comparative Physiology, etc.*, pp. 12 *et al.*

tinuity, and by the conviction gained by direct relations with the higher animals, we do admit with practical unanimity that animals who respond in varied fashion to a fixed environment are to be counted as conscious.

It will be well to illustrate with more care the exact nature of this criterion of consciousness. It has been described already as the occurrence of adaptive, that is, of varying, reactions. Not only are the movements of animals at this stage discriminative, that is, different for different environments, but they are also varied in the same environment: in other words, though the environment remains unchanged, the animal, far from responding with one fixed movement, reacts with progressively increasing complexity and effectiveness. The dogs and cats, for example, in Thorndike's experiments, who succeeded in learning to let themselves either out of boxes or into them by unfastening latches of varying difficulty, at first responded to the stimulus of the closed door, by a relatively fixed, indiscriminate response to the entire environment, for instance by clawing at the whole surface of the door. Among these repeated and ineffective movements, however, a specialized action presently emerged, which drew the fastening; and this successful movement was repeated, at first by accident; and the casual repetitions resulted at length in the formation of a new motor response, a variation of the original reaction. Adaptive variation of response, as thus described, is — it will be observed — identical with the first stage in the developing consciousness of a self, the process of learning through association.¹ This criterion of the presence of consciousness implies thus the existence of a truly developing consciousness.

In passing, this criterion of consciousness should be distinguished from two others, current in modern psychology. By some psychologists, as, for example, by Schneider, the purposiveness of an act, that is, its utility, is made the voucher for its psychic character. There are two objections to this doctrine. In the first place, it defines non-mechanical actions from the standpoint not of the reacting organism but of the observer; in the second place, it makes the doubtful assumption that there are simple reflex actions which are not purposive. A second criterion of consciousness has recently been proposed by Dr. Minot: the ability to "dislocate reactions in time, that is, to delay reactions to a given stimulus."² To this, it has reasonably been objected³ that "un-conscious mechanisms could be constructed and indeed do exist

¹ Cf. p. 716, above.

² *The Problem of Consciousness in its Biological Aspects*, *Popular Science Monthly*, 1902, vol. LXI, pp. 289 seq., esp. p. 293.

³ H. S. Jennings, *Studies on Reactions to Stimuli in Unicellular Organisms*, ix, *Amer. Jour. of Physiol.*, vol. VIII, p. 57, 1902.

in which there is a dislocation in time between the action of an outer agent — and the reaction of the machine." This time-adjustment is, in fact, merely a subordinate form of that general ability to vary the response to a fixed environment, which constitutes a non-mechanical, and thus an admittedly conscious activity.

At last, the way has been cleared for the definite question, what animals have been proved to react adaptively, that is, to learn? To begin with the unicellular animals: Verworn¹ and Jennings² have shown that most of them make a fixed and utterly unvaried response to a given environment. Many of them even react in but one way to all surroundings, giving the same response to every stimulus, however localized. The *Paramecium*, for example, as described by Jennings, "responds to any stimulus by swimming forward.

. . . The direction of motion is the same whether the source of stimulation is at the anterior end, the posterior end, the side. . . . If the stimulus is at the posterior end [the animal] swims towards it even though this results in . . . destruction." Other organisms of this class have more than one form of reaction, but respond invariably by the same reaction to a given stimulus: the changed response is, in other words, called out only by altered surroundings. In the *Dileptus*, for example, and the *Loxodes* — forms of *Ciliata* — the reaction varies slightly with differently located mechanical stimuli:³ a stimulus in front causes the *Dileptus* to swim backward, whereas a posterior stimulus is followed by forward motion. The essential feature of both types of reaction, of the indiscriminate and the discriminate response alike, is the fact that, in both cases, the movements are fixed and unvarying if the environment do not change.

There is, however, at least one experimentally observed exception to the rule that unicellular animals react in this unvaried fashion. This is the case of fixed infusoria, *Stentor* and *Vorticella*, which not only vary their response to different stimuli, according as these are harmful or beneficial; but which markedly alter their response to a given stimulus, when it is prolonged.⁴

Observation and experiment have, however, mainly had to do not with unicellular organisms but with animals of more complex structure. Romanes and Loeb have studied the radiates. Romanes attributes sense-consciousness both to jelly-fish and to

¹ *Psycho-physiologische Protisten-Studien*, Jena, 1889. Cf. pp. 137 seq., p. 141. Cf. for similar studies of plants: Pfeffer, *Untersuchungen aus dem botanischen Institut*, II, Tübingen, 1888.

² *Studies on Reactions to Stimuli in Unicellular Organisms*, II, *The American Naturalist*, vol. 33, p. 386, 1899.

³ H. S. Jennings, *On the Movements and Motor Reflexes of the Flagellata and Ciliata*, *Amer. Jour. of Physiol.*, vol. III, pp. 242 seq., 1900.

⁴ H. S. Jennings, *Studies on Reactions to Stimuli in Unicellular Organisms*, IX, *Amer. Jour. of Physiol.*, VIII, pp. 23 seq., esp. 52 seq.

starfish, but he reaches this conclusion from the disputed standpoint of the continuity hypothesis. "The starfish," he says, "perceived the proximity of food, as shown by their immediately crawling towards it."¹ He thus argues consciousness from simple reaction, instead of experimenting on the starfish to discover if they would not react similarly to unodorous stimuli. Other experiments on different orders of radiates have not to my knowledge resulted in the discovery that they make adaptive reactions, though Loeb's experiments offer evidence of their discriminate movements.² The tentacles of actinians, for example, draw in meat, and reject paper; but so far as is reported, they do not handle the meat or paper with increasing expertness.

Studies of mollusks, also, so far as I know them, have consisted in examination of their sense-organs,³ in the study of the function of their nerve-systems, and in experimental observation of their immediate reactions, but have not included any effort to train them to adaptive reactions. None the less, Loeb concludes that cephalopods may possess associative memory.⁴ It is certainly to be wished that some investigator might study different orders of the radiates and the mollusks, with the express aim of discovering whether they may be trained to adaptive reactions. For herein, and not in the possession of acute sense-organs nor in the capacity for discriminated yet invariable reactions, is the trustworthy test of consciousness.

Different orders of the articulates have been studied with this special end in view, with the result that they have been trained to simple motor habits. Loeb, to be sure, interprets the movements of worms as mere reflexes, but he argues mainly from the inconclusive premise that their most complex reactions seem not to require coördination through brain-centres. Yerkes,⁵ Yerkes and Huggins,⁶ and Spaulding⁷ have experimented on crustacea and have proved that both crayfish and crabs can learn by the trial and error method to find their way through simple labyrinths. Spaulding's experiments are noteworthy, since he trained his crabs to a habit opposed to their instinctive heliotropism, namely, to seek food in the dark.⁸

¹ *Jelly-fish, Star-fish and Sea-urchins*, p. 321.

² Loeb, *op. cit.*, chap. iv, pp. 50 seq.

³ Cf. J. W. Spengel, *Die Geruchsorgane u. das Nervensystem der Mollusken* *Zeitschr. f. wiss. Zool.*, xxxv, p. 333; W. A. Nagel, *Bibliotheca Zoologica*, Heft 18, 1894; Loeb, *Der Heliotropismus der Thiere*; J. Steiner, *Die Functionen d. Central Nerven Systems der wirbellosten Thiere*, *Sitzungsberichte d. Akad. d. Wissensch.* I, p. 32, zu Berlin, 1890.

⁴ Loeb, *op. cit.*, p. 227.

⁵ *Biological Bulletin*, III, 5, Oct. 1902.

⁶ *Harvard Psychological Studies*, I, pp. 565 seq., 1903.

⁷ *Journal of Comparative Neurology and Psychology*, 1904, vol. IV, pp. 49 seq., esp. p. 58.

⁸ The opposed results of Bethe's experiments on crabs (*Archiv für mikroskop. Anatomie*, LI, p. 447, 1898, quoted by Yerkes, *Harvard Psychol. Studies*, I, p. 565) are evidently due mainly to the insufficient number of his experiments (five or six).

Close observation and careful experiment have been devoted to the study of insect behavior. Bethe alone argues energetically that the movements of ants and of bees alike are unvarying responses to environment, usually to chemical stimuli. But the position, clearly, is untenable. It is contradicted by such observations as that of Forel¹ and others, that "bees, wasps, etc., can find their way in flight through the air, notwithstanding wind and rain (and hence under circumstances precluding the existence of any possible odoriferous trail)." Loeb, also, offers a detailed observation of a wasp which returned to its nest, carrying a caterpillar, and therefore walking not flying. The wasp had flown from the nest, so that it was not following any trail when it carried the caterpillar to the nest.²

Advancing to the vertebrates, we find a number of experimental observations. Triplitt has experimented on perch, repeating and supplementing the classic experiment of Möbius on pike. He finds that perch may learn both to avoid one side of an aquarium and to inhibit the instinct to feed on smaller fish.³ Yerkes has performed the only experiments which I know on reptiles.⁴ His turtles learned to find their way through simple labyrinths, by perpetuating successful movements — even the chance movement, unforeseen by the experimenter, of falling from the side of an inclined plane, instead of crawling to the bottom of it.

To the well-known experiments of Douglas Spaulding, Morgan, and Thorndike on young chickens, Porter⁵ has added a set of experiments on the English sparrow. The investigators all agree that birds learn through progressively varying reactions. Thorndike's chicks learned to open the fastenings of boxes; Porter's sparrows opened boxes and found their way through labyrinths; and Morgan's chicks and pheasants were taught by experience to avoid distasteful food.

For the mammalia, Small⁶ and Watson⁷ and Miss Allen⁸ have proved that rodents learn to make their way through labyrinths of varying difficulty; Morgan⁹ and Mills,¹⁰ Thorndike¹¹ and Hob-

¹ *Ants and Some Other Insects*, p. 18. Cf. Forel's ingenious experimental proof of the memory of bees (not, as he thinks, of their inference), *op. cit.*, pp. 22-27.

² *Op. cit.*, pp. 224-227.

³ *Amer. Jour. of Psychol.* 1901, vol. xii, pp. 354 seq.

⁴ *Pop. Sci. Mo.*, 1901, vol. 58, pp. 519 seq.

⁵ *Amer. Jour. of Psychol.* xv, pp. 313 seq., 1904.

⁶ *The Psychic Development of the Young White Rat*, *Amer. Jour. of Psychol.* 1899, vol. xi, pp. 80 seq.; and *Experimental Study of the Mental Processes of the Rat*, *ibid.*, vol. xi, pp. 133 seq., vol. xii, pp. 206 seq.

⁷ *Animal Education: The Psychical Development of the White Rat, Correlated with the Growth of Its Nervous System*, University of Chicago Press, 1903.

⁸ *The Associative Processes of the Guinea-Pig*, *Journal of Comparative Neurology and Psychology*, 1904, vol. xiv, pp. 293 seq.

⁹ *An Introduction to Comparative Psychology*, chaps. 5, 7, 12, 14, 16.

¹⁰ *The Nature and Development of Animal Intelligence*, pt. iii.

¹¹ *Animal Intelligence*, *Psychological Review*, Monograph Supplement, viii.

house¹ — though they differ in specific interpretation — all agree, as the result of independent observation and experiment, that dogs and cats learn, by the repetition of accidentally successful movements, to open difficult fastenings or to find their way through strange ways. Finally, Thorndike,² Kinnaman,³ and Hobhouse⁴ have experimented on different species of monkeys and have found that they learn more swiftly and with greater accuracy than the other vertebrates to perform relatively complex acts.

It follows from the results of these investigations that the scope of comparative psychology probably is as wide as that of animal life. No form of animal organisms is *a priori* excluded, by its structural simplicity, from the group of adaptively reacting animals. Distinctions of behavior and of consciousness, in other words, are not closely parallel with those of structure. Every order of animal life may, therefore, be studied with the possibility in view of discovering indications of non-mechanical, adaptive behavior, and, by consequence, of psychic life.

The boundaries of comparative psychology are, from this point of view, very wide. If, however, one consider not the number of animals that are conscious, but the nature of their consciousness, then the conception of animal consciousness viewed, thus in intension — not in extension, — shrinks to lesser limits. This problem, the nature of the animal consciousness, can be here discussed in briefest outline only.

The minimal consciousness which an animal may be proved to have is, as has been shown, the consciousness which accompanies the trial and error type of learning. This process must, therefore, be carefully scrutinized. On its physiological side, that is, so far as observed behavior and inferred nerve-process are concerned, this sort of learning includes the following stages: There occur, *first*, purely instinctive reactions to environment, for example, the rapid running, hither and yon, of a rat at the entrance of a labyrinth, with food at the centre. Among these different instinctive reactions, there chances, *second*, to occur a successful movement — one which secures the satisfaction of some instinct, in this case, the attainment of food. In the *third* place, this movement which satisfies the instinct is repeated — presumably more than once. The reason for this repetition need not here be discussed. The interactionist would of course explain it as an effect of the pleasure which accompanies the satisfaction of the instinct. The opponent of interaction, while admitting the occurrence of

¹ *Mind in Evolution*, chaps. 7-9.

² *The Mental Life of Monkeys*, *Psychol. Review*, Monograph Supplement, xv.

³ *The Mental Life of Two Macacus Rhesus Monkeys in Captivity*, *Amer. Jour. of Psychology*, 1902, vol. xiii.

⁴ *Op. cit.*

the pleasure, would explain the repetition as effect of some physiological function of the satisfied instinct — as effect, perhaps, of heightened nerve-vigor. Whatever the condition of the repetition, its result is, *finally*, a strengthening of the nerve-connection between the nerve-centre stimulated by the original environment and the nerve-centre whose excitation has brought about the successful movement. In other words, the animal forms the habit of reacting to the original environment by that movement only which satisfies desire. The present question is, what sort of consciousness accompanies the conduct, thus characterized, of the animal which learns by experience? As parallel of the preliminary random performances there is no need to assume any save a sensational and a primitively affective consciousness excited by the animal's environment and by its own movements. But what is the nature of the consciousness which accompanies the immediately successful performance from which these instinctive, random movements have dropped away, so that perception of environment is, at once, followed by the acquired reaction? Psychologists are agreed, in the first place, that these acquired reactions, gained by repeated satisfactions, require imagination on the part of the animals (and of the children) who learn them. The rat which unerringly makes the successively correct turnings through the labyrinth, in which he at first ran about ineffectively, certainly seems to be guided by an image of the food which he has repeatedly found at its centre. (The possibility that the mere smell of the food sets off purely motor reflexes, whose success is due to habit — that the rat, in other words, does not imagine the food, but actually smells it — is excluded by experimenting in a fresh labyrinth, without food at the centre. In this case, the rat's movement evidently is not initiated by an external stimulus.)

The significance of imagination to animals which learn by experience is, indeed, admitted by practically all psychologists. Thorndike alone minimizes its importance, but even Thorndike holds that he has proved imagination in the mental life of his cats. These animals, who had repeatedly heard him speak a sentence and then had seen him rise and give them food, learned to climb up for the food on hearing his voice — that is, before they saw or smelled the food.¹ Of course, it does not follow that these animals remember in the sense of referring experience to their own

¹ *Animal Intelligence*, p. 65. For confirmatory experiments, cf. Kinnaman's accounts of experiments on monkeys (*Amer. Jour. of Psychol.* XIII, 129); also Hobhouse, *op. cit.*, p. 229 *et al.*: "If the direct way into a room is barred, a dog or cat will at once betake itself to any other route. . . . This adoption of alternatives suggests that their action is to be referred not to an impulse urging them to move in a particular direction, but rather to a desire to be in a particular place." Hobhouse gives experimental evidence of the occurrence of these images of places.

past life, of reflectively dating them, as it were. It is indeed unlikely that such relational consciousness occurs, and in any case it is impossible to prove its presence by our necessarily objective methods.

This consideration leads at once to a discussion of the most disputed problems of the analytic section of comparative psychology. It has just been shown that animals possess the simplest form of the learning-consciousness. Do they, in addition, learn by analytical reasoning, that is, have they relational as well as sensational and affective consciousness? And, second, have they the consciousness characteristic of the social type of learning, that is, do they reflectively imitate or oppose themselves to other selves?¹

As regards the question of relational consciousness, it is probable that animals of every order, primates to infusorians, do sometimes perform acts which might conceivably be performed through analytical relational consciousness. To take an example from among unicellular organisms: the movement of the *Stentor* when it reacts to a persisting harmful stimulus by giving up its normal position, that is, by abandoning completely its tube and swimming away to form a new one, might be regarded as performing this movement by analyzing out the relational elements of the situation, by reflecting, "this stimulus recurs perpetually, and so to be unharmed by it, I must avoid it." But the fact that an act is such as might have been performed through the analytical consciousness of relations is far from proving that it has been thus performed. The fact, for example, that animals react in a similar way to distinct yet similar stimuli does not prove that they have analyzed the stimulus and that they realize similarity as one of its elements. On the other hand, it is far more likely that they react to the situation as a whole, noticing neither its difference nor its similarity as compared with that which has preceded. So also the use of implements, noted by many observers in the vertebrates,² by Wasmann and others in ants,³ and by the Peckhams⁴ in wasps, though it might be carried out through analysis of implement and of situation,—this latch to be opened by this supple wire, or this nest-surface to be pounded down by this hard pebble,—is not, in all probability, due to such analysis. For it is a matter of experimental proof that even the higher vertebrates are incapable of analyzing situations except in a very limited way. To a degree they presumably learn to discriminate—else they would probably not react to more and more limited portions of their

¹ Cf. p. 716, above.

² Cf. Romanes, *Animal Intelligence*, pp. 466, 481, 490.

³ *Das Seelenleben der Ameisen*, 1900, p. 83.

⁴ *Instincts and Habits of the Solitary Wasps*, *Bulletin of Wisconsin Geological and Natural History Survey*, 1898, p. 22.

environment, but the discrimination must be of relatively concrete parts of total situations, and the analysis into abstract elements is doubtless beyond them.

There is a twofold proof of the incapacity of animals for abstract analysis. In the first place, the apparent results of an analytic consciousness in animals' behavior often lack the permanence of the conduct characteristic of the truly analytic consciousness. Thorndike's animals, for example, after six or seven times performing some mechanical operation, would "forever after fail to do it."¹ This persistent failure would have been impossible had the animals, in their initial success, analyzed the situation and discovered the precise adjustment of means to end; for such analysis and the resulting consciousness of relation are not readily forgotten. On the other hand, the failure to repeat the successful movement is comparatively natural, if learning is due to the chance connection of total situation with total movement.

The insignificant character of an animal's mental analysis is further shown by the typically gradual advance in its learning-process. The complete analysis of situations — such as is involved, for example, in solving problems and in guessing riddles — is normally achieved suddenly:² it comes, not as gradual dawn, but as a sudden flash of light. The generally regular progress in an animal's acquirement of activities and the lack of permanence of these acquired movements tend, therefore, to discredit the significance of analysis in the psychic life of animals. But the consciousness of relations certainly requires a high degree of the capacity to analyze: the elements of similarity, difference, connection, and totality are with difficulty held by attention. The fact that animals to such slight degree analyze their experience is a strong indication, therefore, that they do not reason analytically. The presence of a faint consciousness of relation, nearly swamped by concrete experiences, is, however, not to be disproved by objective tests. Certain acts of animals and of young children, reported by trustworthy observers, are indeed most naturally thus interpreted. Such are the cases of Hachet-Souplet's *coati*, who reached the eggs on a high shelf by drawing up a distant chair with a scarf twisted around its legs;³ and that of the child of fourteen months, who was observed "to feel his own ears and then his mother's, one day, when looking at pictures of rabbits."⁴ In the main, however, it is fairly certain

¹ *Psychol. Review*, vol. v, p. 552, and *Animal Intelligence*, p. 44. Cf. also *The Mental Life of Monkeys* (p. 15), for the account of a monkey who had learned to pull a loop of wire from a nail, and who "failed thereafter to pull off a similar loop made of string."

² Cf. Lindley, *A Study of Puzzles*, *Amer. Jour. of Psychol.* 1897, vol. VIII, pp. 473 seq. and 481.

³ Hachet-Souplet, *Examen psychologique des animaux*, pp. 70 seq.

⁴ F. Tracy, *The Psychology of Childhood*, p. 44, 1893.

that animals react to situations as wholes, that they seldom or never analyze, that they consequently lack relational experience, which, of course, means that they reason — if at all — from concrete to concrete.

The second fundamental disagreement among students of descriptive animal psychology concerns the question, do animals learn by the second sort of learning-consciousness; do they, in other words, possess the social consciousness involved in reflective imitation and opposition? The main reason urged by those who contend that animals do not imitate, in the social sense, is that imitation and its converse, opposition, involve the consciousness of one's self in relation to other selves,¹ and that animals are incapable of self-consciousness. In the opinion of the writer, this position is entirely untenable. Animals, if they are conscious at all, must be self-conscious, for consciousness of any other sort is inconceivable. To be conscious simply means to be conscious of one's self, in this or that or the other situation. The only ground for questioning this view is, in truth, the old tendency to confuse the implicit self-consciousness of every experience with the definite, discriminated, reflective, self-consciousness of the psychologist or the philosopher. Self-consciousness, in the latter sense, is as impossible to the animal as to the child, and is properly opposed by the ordinary argument: animals and babies, because incapable of abstraction, are therefore incapable of self-consciousness. But self-consciousness, as a vague, undifferentiated sense of what Hobhouse calls "self as a pervading identity and permanent character,"² every animal which is conscious at all must possess.³ Indeed, all who admit, as most psychologists do, that animals possess the primal emotions of affection and aversion — not to mention sympathy and jealousy — thereby grant the self-consciousness of animals.

It does not, however, follow, that the self-consciousness of animals is either as explicit or as complex as that of adult human beings. And, in particular, it does not follow that any animals have attained the explicit self-consciousness involved in reflective imitation. The great majority of cases of alleged animal imi-

¹ There is not time to defend the position, here assumed, that imitation is primarily personal, though, secondarily, it may come to have an impersonal "copy."

² *Op. cit.*, p. 312.

³ Cf. Hachet-Souplet, *Examen psychologique des animaux*, p. 81: "Un chien est assis sur un banc, je crie: Ici! il vient immédiatement. Six chiens se trouvent assis sur un banc, et, parmi eux, a pris place le premier . . . Je crie: Ici! sur le même ton que précédemment; aucun ne bouge. Chacun attend donc que je dise: Dick! Tom! ou Pompon! . . . ils savent qu'il existe d'autres chiens qu'eux. Cela prouve clairement que le chien a la notion de sa personnalité." Cf. also C. L. Herriek, *The Beginnings of Social Reaction in Man and the Lower Animals*, *Jour. of Comp. Neur. and Psychol.*, April, 1904. And cf. Verworn, *Protisten Studien*, esp. p. 210.

tation, for example, the imitations involved in the so-called social life of insects,¹ fall into two classes: they are either fortuitous repetitions of actions instinctive in a large group of animals, — and in this case, they are not in any true sense imitations, — or they are merely mechanical imitations, known as such by the observers, not by the performers, in which the action of one animal serves as direct stimulus of another animal's act. Reflective imitation on the other hand, implies the purpose of the imitator to model his own act on that of another self.² Among recorded cases of animal imitation, Hachet-Souplet's record of dogs who imitate the trainer's voice,³ and Kinnaman's⁴ account of his monkey's imitation of its fellow, represent what seems most like reflective imitation; yet neither case is decisive. An objective test of imitation of this sort, and of the correlated experience, reflective opposition to other selves, would, however, be so hard to find, that it is not fair to deduce merely from the lack of proof the positive impossibility of the experience. It is still less justifiable to base an argument against the occurrence of animal imitation on the fact,⁵ noted by Thorndike, that animals fail, often, to perform actions which the experimenter or a fellow animal has repeatedly performed in their presence. For in these cases, it is likely that attention, certainly a prerequisite to imitation, is distracted.

A discussion of the scope of child psychology, were there time to introduce it, would follow a similar plan. The first question of child psychology differs, however, from the initial problem of animal psychology. There is no reason to ask: What children are conscious? For there is here no question of different species, but only of different individuals. In other words, it is generally admitted that all normal human beings, at some period of their development, become capable of both sorts of learning through individual experience, first, learning by trial and error in dealing with concrete situations; second, learning by analysis of these same situations. It is admitted also that all normal human beings develop in the social fashion, by reflective imitation and opposition, both concrete and analytic. The basal question of genetic child psychology is, therefore, at what age is a child proved to be conscious? The method of solving the problem has already been indicated. As that animal which reacts adaptively is thereby proved to be conscious, so a child is proved to be conscious at that age at

¹ Cf. Wasmann, *op. cit.*, chap. 1.

² For development of the doctrine that imitation is primarily personal, cf. J. Royce, *Century Magazine*, 1894; also, the writer's *An Introduction to Psychology*, p. 341.

³ *Op. cit.*, p. 106.

⁴ *Op. cit.*, *American Journal of Psychology*, XIII, pp. 122 and 199.

⁵ *Animal Intelligence*, pp. 60-62; *The Mental Life of Monkeys*, pp. 34 seq. Cf. Hobhouse, *op. cit.*, pp. 148 seq.

which it varies its response to the environment. The uncertainties of child psychology, it may be noted, — the problem, for example, of the age at which a child first reasons, and the problem of the origin, imitative or spontaneous, of the child's language, — belong mainly to the period of infancy when the occurrence and the nature of the child's consciousness must be established by objective tests. The more important domain of child psychology is, on the other hand, the study — supplemented by the introspection of the older child — of its relatively developed processes of thought, of its realized imitations of other people, and of its self-assertive oppositions to them.

This address has aimed to suggest the scope and the limits of genetic and of comparative psychology. In particular, it has attempted: first, to vindicate the right to existence of genetic psychology, viewed as a science of developing selves; and second, to formulate and to apply a safe objective test for use in the comparative study of consciousness. Incidentally, this paper can hardly have failed to show that the experimental method, already so fruitful in psychology, may be employed also to great advantage in the solution of genetic and of comparative problems, provided, first, that it be based on sound conceptions, and second, that it be applied in accordance with the claims of a rigid logic.

[illegible]

THE FIRST MURDER

Photogravure from the Painting by Adolph Bouguereau

The name of Cain has always been associated with the crime of murder; Cain, according to the Biblical account, having slain his younger brother, Abel, out of envy. The famous painter, Bouguereau, has here presented a most pathetic scene of the first parents mourning over the death of their favorite son.



SECTION D — ABNORMAL PSYCHOLOGY

SECTION D—ABNORMAL PSYCHOLOGY

(Hall 6, September 24, 3 p. m.)

CHAIRMAN: DR. EDWARD COWLES, Waverley, Mass.

SPEAKERS: DR. PIERRE JANET, Collège de France, Paris.

DR. MORTON PRINCE, Boston.

SECRETARY: DR. ADOLF MEYER, New York City.

THE RELATIONS OF ABNORMAL PSYCHOLOGY

BY PIERRE JANET

(Translated from the French by Dr. J. W. Baird, Johns Hopkins University)

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GENTLEMEN: I feel that it is a great honor to be called upon to address the Section of Pathological Psychology in the St. Louis Congress. The United States has done much for psychology; your magnificent laboratories, your important publications, and your eminent men who have devoted themselves in great numbers to psychological investigation, have contributed abundantly to the development of the science. We are pleased to come and admire your work; we are proud to bring to you the results of our own investigations.

I am the more encouraged to present to you the greetings of the psychologists of France, by the fact that we have been concerned chiefly with the somewhat specialized topic of pathological or abnormal psychology to which this Section of the Congress is to be devoted. If I mistake not, the investigators of other countries tend to separate two branches of study which we are disposed to unite; they study on the one hand, the psychology of the normal individual, or the individual who is regarded as being normal, and on the other hand, they are concerned with mental diseases, their analysis, and especially their classification. It seems to me that we in France, under the influence of two of my masters, Ribot and Charcot, whose names I am pleased to recall to you, have endeavored rather to throw light upon psychiatry by a study of

normal psychology, and to regard mental diseases as experiments which have been cunningly devised by nature to show us such suppressions and modifications of function as the experimental method demands. Our psychological laboratories, situated as they often are in hospitals for nervous and mental diseases, as at the Salpêtrière, at Ste. Anne, and at Villejuif, have endeavored to unite the psychologist and the alienist in a common investigation.

This union, alike in France and in other countries where it has also been accomplished, seems to me to have been advantageous to both sciences. In psychiatry it has to some extent turned the investigator aside from investigations which are actually useless because they cannot be utilized. One is scarcely able, even to-day, to make a complete classification of mental disorders from a single point of view as is required by logic. As Ziehen has remarked, mental diseases are classified differently from the standpoint of symptoms, of etiology, of evolution, and of pathological anatomy. Moreover, it must be confessed that we do not know the real causes of mental diseases; and it is bootless to disguise our ignorance by a cloak of philosophical speculation or of hypothetical anatomy. The pathological psychologist has recognized that he must begin at the beginning. He has endeavored to penetrate more thoroughly and more sympathetically into the mental states of the diseased; he has attained greater accuracy in the analysis of symptoms; he has observed and, so far as possible, has measured the alterations of psychical function. In short, psychological experimentation has introduced into psychiatry a rehabilitation and a refinement of the clinical method.

The older psychology, permeated as it was throughout with philosophical speculation, claimed to find that the mental states were as simple and as unchanging as its theories. It studied memory in general, reason in general, the theoretical and abstract will, without first taking up the question as to what constitutes memory, reason, and will in a particular individual, under particular conditions, at a particular age, in a particular state of health. The investigation of pathological conditions has forced it to recognize that these phenomena are not fixed and immutable; it has come to see that they wax and wane, that they are subject to change, and that a multitude of degrees are represented in their developmental transformations. Psychology has thus been led to seek, even in the normal individual, for those changes and oscillations which it has found to be characteristic of the abnormal individual; it is no longer abstract, but has become a more real and living thing. If one may use the expression, it has ceased to be purely static, and has become dynamic. The study of the oscillations of

mind which have been brought to light by pathological psychology, has called attention to a group of phenomena which can scarcely be classified among the older faculties, and have been neglected as being of no significance — the phenomena of fatigue, of sleep, of the emotions, of the various forms of intoxication, of the neuropathic disorders. It has also called attention to the opposite modifications which occur in repose, in the waking state, in calmness and *sang froid*, and in convalescence (even though it be but temporary). These modifications constitute the most apparent oscillations of mind. Permit me to lay emphasis upon these depressions and these excitations, and to remind you of the investigations which have been made in this connection. These topics are of even greater significance; they represent the most important of the present problems of pathological psychology.

One of the first modifications of mental states to which I wish to call attention, is illustrated by the semi-normal, semi-pathological condition which is induced by fatigue. It is a familiar fact that the physical and mental being does not always maintain a constant condition; that it is incapable of manifesting uniform phenomena when submitted to prolonged effort; that its functions vary from the beginning to the end of a period of work. And the change induced is essentially of the same character whether the work be physical or mental. The investigation of mental fatigue dates from an early period. You doubtless recall an old observation by Holland which has been cited by Ribot.¹ "An engineer relates the following experience: 'When I was down in a mine, I felt myself overcome by fatigue and lassitude to such a degree that I found it impossible to converse with the German inspector who accompanied me. Every word, every phrase of the German language had escaped my memory, and I recovered them only after taking nourishment and rest.'" Here we have a first well-marked opposition between the normal state and the state of fatigue. Oppositions of this sort have been the object of numerous investigations, among which may be mentioned Galton's interesting study of the influence of fatigue and overwork in schools, the investigations of a great many German authors, instigated for the most part by Kraepelin, the remarkable observations of the French physician Tissié, who made a physiological and psychological examination of the contestants in various forms of athletic sports, the investigations of Féré, of Binet and Henri, etc. All of these investigations show the presence of modifications of constant character.

It is to be noted, first of all, that an apparent exaggeration of

¹ Ribot, *Maladies de la Mémoire*, p. 114.

function occurs with the advent of fatigue. This functional change makes its appearance in the form of a physical agitation, or in other words, an exaggeration of movement. Galton found signs of fatigue when he examined the posture of a subject to whom a difficult passage was being read aloud. The fatigued auditor yawns, stretches himself, shifts his position, and contracts certain facial muscles. In school-children one may observe movements of the eyebrows, of the lips, of the forehead, and of the fingers; and if the degree of fatigue be increased, these movements soon pass over into chorea and tics. Experimental investigations, such as those of Sommer and Bettmann, have revealed the presence of a modification of the reflexes and an increase in the number of tremors in the ergographic curve. Pathological investigations have shown an exaggeration of the reflexes, an extension of innervation to the unused muscles, an involuntary laugh, a muscular tremor, and spasms of various sorts, etc. The agitation induced by fatigue may also be visceral; I cannot lay too much stress upon the spasms of the digestive organs, the changes of respiratory rhythm, the profuse perspirations. The agitation may even be mental; Galton observed irritability, ill-humor, a tendency to magnify small things; and more recently, attention has been called to various forms of fancies which take possession of the mind and even degenerate into pathological obsessions.

The subject is well aware that something abnormal is taking place within him; he is conscious of certain abnormal sensations. Galton emphasized the feeling of incapacity which increases with increase of fatigue; Oehr, in 1895, and more particularly Tissé, laid stress upon the feeling of weariness as a characteristic symptom of fatigue. These phenomena are observed alike in bicyclists, in children who do mental work, and in subjects who repeatedly perform an experiment. These feelings correspond to something which is perfectly real; it is possible to demonstrate in various ways that a decrease of mental function runs parallel with the agitation. Whether we examine the subject's penmanship, or measure his capacity to insert a needle into holes in a perforated plate, — as I did in 1889, and as Bryan has also done, — we invariably find a lack of dexterity, a lesser precision of movement. The diminished rapidity which is found to be characteristic of reactions and of all sorts of motor adjustments has been demonstrated in innumerable ways (Kraepelin, Oehr, Burgerstein, Vaschide, Binet and Henri, etc.). On the other hand, attention and power of apprehension also decrease in considerable degree; and one finds an increase in the number of errors in tasks whose accomplishment depends upon automatic mental processes, or the mechanical association of ideas (Cattell, Finzi, Sikorsky, Hopfner,

Burgerstein, Laser, Thorndike, Binet). The memory undergoes a change, as we saw from the illustration cited by Ribot; acquisition becomes more difficult (Ebbinghaus, Finzi, Schneider); the power of recollection, the certainty and the correctness of response, decrease (Ranschburg), and certain classes of memories disappear entirely as I have several times shown. The disturbance even extends to perception (Grote, Marine, Griesbach, Leuba). All of these phenomena are in striking contrast with those that occur in repose. This opposition between the mind in the state of rest and in the state of fatigue, is of prime importance for pathological psychology.

Similar phenomena are to be observed in the various forms of intoxication; here, too, is to be seen an interesting opposition between the mental state of the intoxicated and of the non-intoxicated individual. Numerous investigations, such as those upon hashish by Moreau de Tours, those upon alcohol by Richet, and many others, have established phenomena which are analogous to the phenomena of fatigue. But I wish to direct your attention to a class of investigations which has reached a high degree of development in France — those of sleep, or rather of sleeps, for there are many states to which this general name may be applied.

Sleep is a type of oscillation which is particularly deserving of notice in this connection, because it is a wholly relative condition; its phenomena can be determined only in relation to the waking state. An essential characteristic of sleep is the fact that it is attended by a lesser activity of the vital functions. It is not enough to say that sleep is a state in which the temperature of the body averages 36° , the pulmonary expiration is two liters, and the pulse is 54. One must add that these phenomena occur in an organism which is capable when in another condition, of having a temperature of 37° , a respiration of nine liters, and a pulse of 70. It may be said that the organism is unable to keep up its more active form of existence continuously, and that it practices economy during a part of its life. Nor is the oscillation solely physiological; it is mental as well. Dreams are the thoughts of the sleeping man. I need not remind you of all the investigations of dreams which have been made from the time of Hervey de Saint-Denis and of Charma, down to the recent publication of Sante de Sanctis. Let me mention, however, that dreams are attended by a mental agitation which manifests itself in hallucinations, and in a ready association of images which arrange themselves into tableaux with interminable kaleidoscopic changes. Sense-impressions of slight intensity give rise to complex dreams of similar modality (Maury, Sergueyeff, Mourly-Vold). These dreams are characterized by ex-

aggragation and repetition; the Cartesian flea-bite becomes a sword-thrust, and a trifling weight seems an Etna upon the chest. The same dream recurs countless times with wearying monotony. The memory of experiences long since past is vivified; the instincts and the habitual tendencies have free play and develop immoderately; even the hereditary tendencies may intervene in intense degree. It is true that the dreamer may feel that it is all unreal and fictitious, but he is carried along by the turbulence of his imagery, and he frequently experiences the most violent emotions from his images.

Side by side with this exaggeration of certain mental functions there occurs a diminution of other mental functions; and some of the latter are most peculiar and extremely characteristic. It is evident that the consciousness of personality is disordered, and that a duality of personality tends to rise. Charma and Delboeuf report dreams in which a school-master asks them a question; they are unable to answer, but a school-mate rises at their side and to their astonishment gives the correct answer. In another case the dreamer says to a child, "Be careful that you do not tumble," and he himself slips. Thereupon the child replies, "Why don't you follow the advice which you give so freely to others?" Again, a dreamer who has a pain in his head meets a child who is also suffering from headache, and asks the child to suggest a remedy. Will and attention are wholly lacking in dreams. There is no real adaptation either to internal, to external, or to future conditions. There is no resistance, no control, no criticism.

I should like to mention a particular form which the diminution of attention assumes in dreams. Several authors (Egger in France, Schneider in Germany) have pointed out that in dreams only the centre of the mental picture is illuminated; the outlying parts are invisible, or rather they are non-existent. The pictures appear without any setting. And it is just this absence of surrounding objects, *i. e.*, of environment of thought, which explains the absence of comparison and criticism that is characteristic of dreams.

The study of one's memory of dreams reveals other interesting characteristics of the enfeeblement of attention. In the first place, dream-experiences do not become firmly fixed upon the memory. When we awake, we fail to remember what we have dreamed, and dreams which do not recur are forgotten as soon as they take place. This is the form of oblivescence which, in another connection, I have called continuous amnesia,¹ and it is interesting to note that it is to be found in dreams. But there is an even more peculiar feature; Delage, de Sanctis, and Pilez have observed that the striking events and the intensive emotions of the day do not reappear in the dreams

¹ *Névroses et idées fixes*, 1898, I, p. 109.

of the following night. The mother who has just lost a child is surprised to find that she does not dream of her loss, although that subject has occupied her mind all day long. The memory of the lost child may appear in her dreams, but not until some months or some years afterwards. These authors furnish different explanations of this fact, which need not be discussed here. Let us remark, however, that the oblivescence of recent experiences is well known under the name of retrogressive amnesia. In this disturbance, as in dreams, events reappear in memory only after they have long since been experienced.¹ By way of summary, we may say that dreams are characterized by a narrowing of the field of consciousness, by continuous and by retrogressive amnesia.

Other phenomena which are equally semi-normal and semi-pathological, appear in the emotions. When an individual finds himself suddenly placed in a position to which he is not already adapted by previous habituation, when he lacks the time or the strength required to adapt himself to the new conditions, he experiences certain forms of physical and mental perturbation which are of prime importance. In this country where the James theory of the emotions was developed, I need not discuss the emotional value of the visceral excitations. The increase of heart-beat and of respiration, and the spasms of the digestive organs, are well-known features of the state of emotion. It is also known that hunger assumes an exaggerated form in emotion, a phenomenon which in all probability gave rise to the custom of feasting at funerals. These internal excitations extend to the muscles of the members, and in many emotions one may observe an indefinite repetition of violent and useless movements, grimaces, and convulsive contortions of all sorts. Numerous authors have been pleased to find in these incoordinated movements a trace of more or less complete acts which are inhibited in their initial stages in the modern subject; that is, to regard them as vestigial products of movements which attained complete execution when our human or animal ancestors were exposed to similar conditions of stimulation. Stanley Hall's and Dewey's investigations of anger give us a great deal of information upon this point. Moreover it frequently happens that the tics, the various forms of tetanus, and the impulses to flee or to cry out, remain undeveloped in the presence of emotional states.

But we must not confine ourselves to the peripheral manifestations of emotion. The weak point of the famous theory is to be found in the dictum that "We are sorry because we cry"—an objection which has been urged by many authors (Irons, Gardiner, Soury, Dearborn, Sherrington, Baldwin, and others). Side by side with

¹ Cf. *Névroses et idées fixes*, pp. 149, 192.

these motor phenomena, which have quite correctly been called extra-motions, there occur intra-motions which constitute modifications of consciousness; and these psychical resultants are no less important than their physiological concomitants. Emotion is attended by a mental agitation just as it is attended by a physical agitation. A multitude of ideas surge into consciousness and disturb the equilibrium. Some years ago, attention was called to a phenomenon which has since been referred to as the hypermnesia of the dying. Those who have escaped from imminent danger report that at the moment of impending death they saw before them, as in a panorama, the chief events of their lives. This is simply a case of the phenomenon of hyper-ideation which characterizes many of the emotions. Dreams, muttering in somnambulistic states, hallucinations, and even indefinite interrogations are only an exaggerated form of the phenomena observed in the normal individual who talks to himself of an event which has made a violent appeal to his emotions.

Then, too, the emotions are characterized by feelings which are analogous to those already discussed — feelings of weariness and of powerlessness. The subject's personality undergoes a change; he no longer feels like himself, and even the external world loses its reality in greater or less degree.

Depression is no less a feature of emotion than is agitation. The depression may be visceral; it may manifest itself in a diminution of circulation or of respiration (which in emotion as in sleep assumes the intermittent type of Cheyne Stokes),¹ in impairment of digestion, and in gastro-intestinal debility. It may be motor, and evince itself in all the forms of weakness and paralysis which are found to attend certain emotions. A passage from Tolstoi which has been cited by Dumas in his book on *La tristesse et la joie*, furnishes an excellent illustration of this feature: "The assassins could easily have escaped from the scene of their crime, but they were so overcome by emotion, so enfeebled in all their limbs, that they found themselves incapable of flight. Feeling wearied as though by a long walk, they lay down upon the road, and there they remained until they were arrested." The mental depressions are particularly interesting. Popular observation noticed long ago that the individual, when overcome by emotion, is "not himself," that he is "beside himself." And I have shown on numerous occasions that the characteristics which have been acquired by education and moral development may suffer a complete change under the influence of emotion. People who have learned to speak correctly revert to dialect or resume a foreign accent when they are deeply moved. Their writing

¹ The rhythm of Cheyne Stokes, determined by emotion. *Comptes rendus du IV Congrès de Psychologie*, 1901, p. 924.

becomes confused, clumsy, boyish, and full of defects; their whole character becomes coarse and debased. These general depressions are analogous to more definite disorders, and here again the disturbances of memory must be mentioned. Oblivescence of the event which occasioned the emotion, and inability to remember facts which immediately preceded, have frequently been found to accompany intensely emotional experiences in the form of continuous and retrogressive amnesia.¹ But it must not be thought that these phenomena are merely pathological caprices. They are an exaggerated form of a general disturbance of memory which is characteristic of all emotions.

In his celebrated book on *Mind and Body*, Hack Tuke remarked that emotions frequently render the subject insensible, and he reported having seen subjects become blind and deaf as the result of violent emotion. I too have described many similar observations and they have now become a commonplace. These disorders of sensibility and memory are analogous to certain disturbances of perception and attention; and the analogy holds alike whether the object of apprehension be one's self or whether it be the external world. As to will, there can be no doubt that it disappears in the depressive emotions and that the subject, when under intense emotion, is unable to decide what to do; indeed he even loses the power to act upon previous decisions. Hence one may well ask whether the mental commotion is not a more important characteristic of the emotion than is the visceral change. And one seems justified in regarding the consciousness of an emotional state as being something more than a mere counter-effect of peripheral disturbances. These intellectual modifications, these losses of memory, these lacks of decision, these doubts, these failures to see reality as it is and to react upon it as one has previously learned to do, together with the feelings of depression which result from the changed mental conditions, constitute, in my opinion, the essential feature of emotion; and the sensations which arise as a "back-stroke" from the peripheral disturbances are nothing more than a reinforcement, like the added tone in the chord.

It is a remarkable fact that certain emotions are attended by effects which are diametrically opposite to those just described. This second type of emotion may induce calmness, strengthen the visceral functions, arrest the useless mental agitation and replace it by an increased activity of attention and will. This improved condition of attention and will strengthens the tenacity of memory; it gives rise to valid representations of reality and to effective reactions upon one's environment. There are emotions which

¹ Cf. *L'amnésie et la dissociation des souvenirs par l'émotion*, *Journal de psychologie normale et pathologique*, September, 1904.

elevate as well as those which depress, emotions which heal as well as those which destroy. And here again, as in fatigue and in repose, in sleep and in the waking state, we find a remarkable illustration of the oscillations of mind.

Let us now leave those phenomena which may be regarded as normal and examine the characteristics of mental diseases. Here we shall find phenomena of exactly the same sort as those which have already been discussed. Pathological psychology owes much to the study of hysteria. That hysteria is characterized by phenomena which are analogous to those which have been established in fatigue, in the sleeps, and in the emotions, is clearly evident from the different theories of hysteria which have been advocated. Certain investigators have insisted that hysteria is a purely emotional disturbance (the old theory of Briquet). Others have held that hysteria is a sleep-disease — a neurotic disturbance which is due to an excess of sleep (Sollier). Others, again, find an analogy between hysteria and fatigue, and make the former the effect of an excessive degree of the latter (as Féré did in 1885). As for myself, I am an out-and-out eclectic; I believe that hysteria is a disorder of emotion, of sleep, and of fatigue, because all of them are at bottom precisely the same thing. In hysteria one may observe the same intensely exaggerated agitations as are to be found in convulsions, crises, spasms, hallucinations, and in all other cases in which ideas develop automatically as a result of suggestion. One may observe the same feelings of weariness, of powerlessness, and of automatism. "I can see my arms and my legs moving, but it does not seem to be myself. I am a marionette and somebody is pulling the string." One may observe especially the same depressions and the same inefficiency of the higher cerebral functions. Permit me to recall my investigations upon aboulia, aprosexia, and amnesia in hystericals.¹ If an act is even moderately novel, if a situation presents a problem to be solved, the hysterical remains inert and powerless.

It is a remarkable fact that the disturbances of mental synthesis which occur in hysteria bear a close resemblance to the oscillations of mind which have already been described. For example, suggestion, which plays so important a rôle in this disease, can only be explained from the absence of antagonistic ideas which might counteract the idea suggested. This fact shows that the idea remains isolated in the mind of the hysterical, that it develops in the midst of a void, that the picture is not inclosed in a frame. And this is exactly what has been found to be characteristic of dreams. The anesthasias, and frequently the paralyses, of the hysterical, alike consist of a reduction or narrowing of consciousness which is

¹ *The Mental State of Hystericals*, translated by C. C. Corson, 1901, p. 117.

no longer able to make a simultaneous fusion of all the sensations and all the images which come in from without. This is well explained from the remarkable facts which relate to the transference, or better, the equivalence of phenomena in hystericals. One symptom gives place to another, one paralysis is cured and another supervenes, as though the mind were incapable of constituting a single system, and could resume control of one side of the body only at the expense of losing control of the other side. In hysteria we again find interesting disturbances of memory — continuous and retrogressive amnesia — which are identical with those that occur in dreams and in emotion. It is a familiar fact that at the end of an emotion we find that we have forgotten the preceding events, and we are incapable of acquiring the memory of new events. But hysteria is nothing more than this; and that is the reason why an endless discussion has arisen as to whether the hysterical is not merely an individual who has been overcome by emotion, and as to whether traumatic neurosis is not simply hysteria. The narrowing of the field of consciousness seems to me to be the characteristic form which the mental depression assumes in hysteria; and it is of the same sort as that which one finds in sleep, in fatigue, and in emotion.

Let us now consider another disease which I have studied these many years, and which I have discussed in my most recent volumes.¹ Let us take a glance at the innumerable disorders which have been designated obsessions, impulsions, insanity of doubt and of touch, ties, phobias, etc. No matter how various their symptoms may appear, it is possible to find certain fundamental characteristics which are common to all of these diseases. Motor, visceral, or mental agitation manifests itself in unmistakable form in all of these crises of motor agitation, these contortions and ties of all sorts, and in the anguish which constitutes the essence of all the phobias. Everybody knows the peculiar mental agitation of those abnormal individuals who busy themselves incessantly with some insoluble problem; who spend whole days in an endeavor to remember what they did at a certain hour on a certain day ten years ago; who exhaust themselves in attempts to understand why trees are green, or why people have noses; who try to count all the objects they see, or to atone every act by an appropriate exorcism.

All of these agitations seem to have their source in certain feelings which are extremely varied and interesting. I shall mention only the most familiar forms. In connection with all his acts the subject experiences feelings of difficulty, of inutility, of incapacity, of indecision, of uneasiness, of automatism, of domination, of discontent, of humility, of shame, of intimidation, and of revolt. In

¹ *Obsessions et psychasthénie*, 1903.

connection with his intellectual operations he has feelings of difficulty, of insufficiency, of instability, of imperfect perception, of gloom, of strangeness, of *jamaïs-vu*, of mal-orientation, of isolation, of mal-recognition, of *déjà-vu*, of presentment, of unreality, of dreaming, of the lapse of time, of lack of intelligence, of obscurity, of doubt. In connection with his emotions there occur feelings of indifference, of weariness, of anxiety, of ambition, of need of excitement. In connection with his personality, one may note feelings of self-estrangement, of double personality, of depersonalization, of death, etc.

These feelings are far from being fictitious; they are based upon a real depression of the physiological and psychological functions. It is possible to establish real disorders of will which are manifested in indolence, irresolution, slowness, enfeebled effort, fatigue, failure of achievement, absence of resistance, misoneism, social aboulia with insurmountable timidity, professional aboulias and inertias of all sorts. One may establish disorders of intelligence which are manifested in amnesias, doubts, arrests of instruction, unintelligibility of perceptions, inattention, reveries, and veritable eclipses of mind. In connection with the emotions one may note indifference, melancholy, need of loving and of being loved, fear of isolation, and a return to childhood.

It is quite probable that depression phenomena similar to those just discussed, and that feelings of imperfection similar to those just summarized, are fundamental to many of the deliriums. In the delirium of persecution there are many phenomena of this sort, along with disturbances which are vaguely designated disorders of the general sensibility, and which characterize the first period of inquietude.

If these symptoms of depression—the motor retardation, the difficulty of apprehension and of association—become aggravated, one finds various forms of melancholia, whose interpretation constitutes an important problem of pathological psychology. Indeed, it is the chief problem as Kraepelin and his pupils have pointed out. Certain of these depressions are definitive and irreparable; they terminate more or less rapidly in one or other of the forms of dementia. Other depressions are transitory and curable. Is it possible to distinguish them from the outset? That is, at the present time, one of the most important practical problems.

It is a remarkable fact that almost all of the depressions which we have discussed — hysteria, psychasthenia, as well as melancholia — may, under certain circumstances, disappear or change into the opposite condition. We may designate this change as an

excitation in order to distinguish it from the previous agitation which accompanied the depression. An hysterical subject may find herself changed as the result of a crisis, a somnambulism or a suggestion. "I am no longer the same," she says, "I feel new life. My head seems new." She is impressed by the fact that she perceives things much more distinctly than before. "I seem now to see the present objects for the first time. I saw them before, it is true, but they appeared to be in a distant fog. It is only now that I really recognize them." These feelings extend to other functions; it seems to her that she breathes more freely, that her arms and her legs are stronger, but at the same time she has a much more intensive feeling of fatigue. The subject's conduct has undergone a complete change; she sets to work; she resumes her trade without ennui and even with interest. She is capable of making whatever coördinations are necessary, while in her previous condition she remained passive and inert for an indefinite period of time. Her sociability and her natural feelings return to full activity. I have elsewhere described changes of this sort in connection with the influence of hypnotism, and the necessity of direction in hystericals.¹

It is to be noted that these changes appear in exactly the same form in psychasthenic subjects, as the result of certain emotions, as the result of acts which they have been made to perform, or simply in consequence of exhortation or advice after their confidence has been won. Their disorders of perception, their doubts as to the reality of things and of themselves, disappear, and are replaced by feelings of certainty which delight the subject beyond measure. He comes to know himself again, and he experiences deep feelings of emotion, of joy and sorrow, to which he had formerly been a comparative stranger. This change is accompanied in many cases by feelings of joy and delight which it is very important for us to know if we are to understand the mental states of certain religious ecstasies which science is only now beginning to analyze.

- I can only indicate the most striking phenomena which I have observed in connection with the influence of toxines in determining these periods of excitation. Of prime importance for the theory of these diseases is the fact that the fever induced by an intercurrent disease frequently suffices to cause the disappearance of depression and of all disorders depending upon it. I have called attention to certain curious cases in which the development of phthisis has brought about a cure of mental diseases. Women who have been subject to obsessions or agoraphobia for twenty years without interruption, regain their calmness and moral assurance during

¹ *Névroses et idées fixes*, 1898, I, p. 423.

the last months of their lives, when the progress of tuberculosis induces a slight degree of continuous hectic fever. But what I wish to emphasize here is the simple fact that all the symptoms of depression may disappear and give place to an opposite condition.

This is still more evident in the melancholic states of which we have just been speaking. It is known that melancholia may give place to a state of more or less normal excitation in which many of the preceding phenomena are reversed. This is what the older French alienists (Morel, Baillarger), and more recently Ritti, studied under the name of intermittent insanity, circular insanity, and insanity of dual form. This too is what the German alienists are taking up again under the name of depressive insanity, to which they rightly ascribe a great importance. The physiological and the mental conditions presented by these two contrary forms which alternate in the same individual were carefully investigated by Dumas in his work on *La tristesse et la joie*. It would, in my opinion, be most desirable to analyze the states of mental excitation with the same care as has been given to the states of depression. It would be well to discover if the apparent exaltation of mind is real, to determine what pathological phenomena it manifests, and to ascertain whether it can, like depression, become the starting-point of delirium. It is at least certain that depressed subjects believe the ascending oscillation to be possible, that they desire it, and that they make every effort to attain it. Many of the impulses are due to this fact. Dipsomania is in reality a crisis of depression in which the subject feels the need of being excited by means of a poison whose effects he knows only too well, *i. e.*, by alcohol. And there are many impulses of the same sort.

The phenomena which we have just passed in review, are unquestionably of very different sorts; an analysis of their characteristics, and a study of the conditions of their development, leads one to distinguish the fatigues, the sleeps, and the emotions from one another. I myself have done enough in the way of distinguishing the hysterical from the psychasthenic states, and even of differentiating their various varieties, to escape the charge of confusing them. But however important these distinctions may be, it must be recognized that all of these facts possess certain features in common, which indicate the existence of a general law. These common characteristics, which, I repeat, manifest themselves in very different forms in the different cases, may be divided into three groups. In the first place, there are phenomena of motor visceral or mental agitation; then there are the specific feelings for which I have proposed the name "feelings of incompleteness,

(*incomplétude*);”¹ and finally there are the phenomena which are characteristic of depression, of diminution of physiological, and especially of psychical functions. In states of excitation one finds the three groups of phenomena occurring in inverse form, — the phenomena of agitation disappear, feelings of incompleteness are replaced by feelings of satisfaction, and the physiological and psychical functions undergo an elevation. Of these three groups of facts, the third, which is constituted by diminution and augmentation of function, seems to me to be by far the most important and the most necessary for us to attempt to understand.

How are we to envisage these transformations which are still far from being understood? It will suffice to summarize them in the form of a general hypothesis which may serve at once to résumé a great many facts, to provoke discussion, and to instigate investigation. The phenomena which we have passed in review testify to the fact that the various functions of the nervous system are not all of equal difficulty. Certain functions are more facile than others, and require a lesser amount of nervous energy for the production of their mental phenomena. These functions seem to be arranged in a hierarchy of increasing degrees of difficulty; for when a nervous system loses or regains its strength, its functions disappear or reappear in a regular sequence. The functions which are the first to disappear are evidently the most complex, *i. e.*, those which are concerned with the synthesizing of a great number of sensations and images. We must therefore take account, as has been done particularly in England since the work of Hughlings Jackson, of the order of development of cerebral centres and cerebral functions. The functions which are the last to be developed in the race and in the individual are evidently the most complex and difficult; they will naturally be most readily affected in fatigue, in sleep, in emotion, and in diseased conditions of the nervous system. Finally, I believe that these two notions may be united by the introduction of an additional conception. The mental operations which are at once most difficult of accomplishment and most recent in origin are those whose function it is to bring the individual into relation with the given reality of the moment. They are most complex because reality is in touch with us at so many points, and most recent because the world about us is constantly changing. Evolution is not a thing of the past alone; we are constantly called upon to adapt ourselves to new situations, and to evolve new organs and new functions as our animal ancestors did in developing to our present condition. Now, one can readily see that it is just the adaptation to the present reality, the reaction upon reality, the feeling and enjoyment of reality, which disap-

¹ *Obsessions et psychasthénie*, 1903, I, p. 264.

pears in all depressions, and which, on reappearing in the subsequent excitations, gives rise to feelings of joy and gladness.

Below these highest functions are to be placed those mental operations which occur when present reality is to a certain extent ignored, and the present reaction consists in an automatic repetition of the past. "I must not pay attention; my work will not proceed satisfactorily if I become absorbed in it." Still lower down we must place the abstract mental operations; these have to do solely with few and non-complex images, nor are they concerned with new adaptations. It is a mistake to suppose that abstract reasoning, imagining, and remembering are the highest mental operations. These are of value only when they are engaged upon the (concrete) present; so soon as they become abstract, they cease to be difficult, and prove to be most commonplace achievements. A high degree of development of purely representative memory is frequently attained by savages, by children, by the feeble-minded, and by the insane. Still lower down, we would have uncoördinated visceral excitation, such as is present in the emotions, in the uncoördinated motor agitations, in tics, and in convulsions.

In short, the mental functions disappear more readily in proportion as their coefficient of reality is higher, and persist longer in proportion as their coefficient of reality is lower. Thus from the point of view of knowledge and of action, or of their correspondence with each other (Spencer), the mental functions constitute a series of decreasing difficulty, according as their relation to reality diminishes. If we consider these conceptions in connection with the philosophical views of Spencer, Höffding, Ribot, and Bergson, they throw light upon many of the observations and experiments of pathological psychology.

If this is true, one can understand that there are degrees of psychical tension, and that to these different degrees there correspond modifications not only in the intensity, but also most interesting modifications in the quality or nature of phenomena. *The degree of psychical tension or of elevation of mental level is indicated by the place in the hierarchy which is occupied by the highest phenomena to which the subject can attain.* Confidence, perception of reality, and reaction upon reality, require the highest degree of tension; these are phenomena of high tension. Reverie, motor agitation, and visceral agitation require much lesser degrees of tension; these may be regarded as phenomena of low tension, corresponding to a lower mental level.¹ The changes in psychical function which we have observed may then be summarized by the conception of a definite lowering or elevation of psychical tension, by the conception of an oscillation of mental level.

¹ *Obsessions et psychasthénie*, 1903, I, pp. 499 ff.

If we put this interpretation upon the essential fact of depression, the feelings of imperfection are only the expression in the mind of the subject, of a real lowering of the mental level. The apparent agitation seems to me to be a sort of derivative; the psychical tension, since it is not employed upon the higher mental phenomena which it is no longer capable of producing, is expended upon lower phenomena; and it may now give rise to a veritable explosion of phenomena which are infinitely numerous and powerful, but which always occupy an inferior place in the hierarchy.¹ These feelings and this derivation will disappear when the higher phenomena have again become possible in the opposite state of excitation.

This rapid sketch shows us what has been the direction taken by the chief investigations of pathological psychology. We have summarized the results of numerous investigations which have already been made, and have indicated the trend of those that are to come. What problems are set for us to solve by the notion of an oscillation of the mental level? What phenomena are characteristic of the depression and of the reëlevation (excitation) of the level? In other words, what precise position in the hierarchy is occupied by each mental function? A rapid association of ideas, and a development of automatism do not always indicate an elevation. There are agitations which coincide with depressions, and which may be regarded as a sort of derivative. How does the derivation come about? How do the phenomena belonging to a lower level replace a vanished phenomenon of a higher level? What are the characteristics of excitation, which has been studied much less than depression? What factors determine these two groups of phenomena? How does it come that in different diseases these phenomena appear now in one form, now in the alternate form? What is the mental result of the indefinite prolongation of a state of depression or of excitation? The answers to these questions will doubtless some day help us to solve the difficult problem of the classification of mental diseases. Finally, is it possible to discover therapeutic agents, whether physical or mental, which will act upon the oscillations? Our knowledge upon all of these points is still in a rudimentary stage. But it seems safe to assert that the notion of the elevation of mental levels is beginning to assume a definite form; and that it has opened up to us an important chapter of pathological and of normal psychology.

¹ *Obsessions et psychasthénie*, I, p. 994.

SOME OF THE PRESENT PROBLEMS OF ABNORMAL PSYCHOLOGY

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To discuss the present problems of abnormal psychology without acknowledging the debt we owe to the distinguished psychologist who has addressed us to-day would be as impossible as it would be ungrateful. One may be permitted to question whether a section on abnormal psychology would have appeared upon the programme of this Congress if Dr. Pierre Janet had not already gone before and opened up this great field of investigation through his brilliant researches. It is not too much to say that numerous as are the problems awaiting solution, there is scarcely one which has not already been illumined by this investigator's penetrating observations.

In our own country, too, we owe much to Boris Sidis, a patient student and keen investigator of psychological problems, whose researches in the dissociation of consciousness and genesis of hallucinations have given precision to our conceptions of these abnormal conditions. The time at my disposal will not allow me to refer by name to the work of other students, though I cannot forbear calling attention to the great impetus given to the study of this fascinating field of research by the labors of Charcot and of the brilliant Salpêtrière group of scholars who still love to call their old chief, Master. Certain problems in subconscious automatism will always be associated with the names of Breuer and Freud in Germany, and Alfred Binet in France. It is encouraging to see the growing interest in this field, and the increasing number of students who are pursuing its problems.

As a field of research abnormal psychology belongs both to the psychologist and the physician. It has thrown much light on the mechanism of normal mental processes, for disease dissects the mind and brings into view the mechanism of its processes much

better than can the introspective study of the psychologist. In the department of medicine it has furnished an intelligible explanation of many previously incomprehensible derangements of the mind and body. With this increase in precision of our knowledge of mental processes it has ceased to be sufficient for the physician to know that an anesthesia or paralysis or other disturbed function of the body is due to some mysterious mental influence, but medical culture requires that he should know the exact mechanism of this influence. The researches of recent years have furnished this knowledge in many important particulars.

Dissociation and Automatism

Abnormal psychological phenomena, as phenomena, may be divided into two great groups, according as they are manifestations of (A) dissociations or weakened syntheses of conscious states, or (B) of automatisms.

In the first group (A), the dissociations and imperfect syntheses, may be placed the losses of memory (amnesias), the losses of perceptions (anesthesias), the losses of motor functions (paralyses), the alterations of character, the division of personality, etc.

The second group (B), the automatisms, would include all those phenomena which are the expressions of an activity beyond the will and control of the personal consciousness and involve abnormal syntheses. It would include the fixed ideas, the hallucinations, the deliriums, the obsessions, impulsions, tics, contractures, convulsive seizures, and various perversions of the visceral processes. The automatisms may be still further classified according as they are syntheses of dissociated (so-called subconscious) elements, so characteristic of hysteria, or syntheses of the personal consciousness characteristic of psychasthenic states. Both may exist together.

These two classes of phenomena (A and B) bear a reciprocal relation to one another, in that *pari passu* with the development of a weakening of the power of synthesis, or of a complete dissociation, the remaining restricted elements of the personal consciousness, or the dissociated elements, respectively tend to take on automatic activity; as an example, take the obsessions of psychasthenia confined entirely to the personal consciousness, and the hysterical attack due to the automatic activity of dissociated (subconscious) memories of past experiences. And *vice versa*, the development of automatism with its abnormal syntheses tends to induce dissociation, as when an artificially induced idea robs the personal consciousness of its sensory perceptions (anesthesia) or produces retrograde amnesia. Thus in any particular syndrome, such as the hysterical state, or the psychasthenic obsessions, we have combined the

manifestations of dissociation or weakened synthesis with those of automatism.

The problems of abnormal psychology become, then, very largely problems of dissociation, weakened syntheses and automatism; and if the laws which govern these processes can be determined, we shall be able to correlate most, if not all, abnormal psychological states. As dissociation and automatism are also principles of normal mental life, as, for example, the phenomena of absentmindedness and the artifacts of suggestion, in these same laws we may find a correlation of abnormal psychology with normal psychology. Thus simply as manifestations of, or perverted working of, the normal dissociating and synthesizing process, whether psychical or cerebral, we may find an explanation for and correlate:

- (1) Physiological states, like
 - Sleep,
 - Dreams,
 - Normal forgetfulness (amnesia),
 - Moods,
 - Absentminded phenomena,
 - Natural somnambulism.
- (2) Artifacts like,
 - Hypnosis and post-hypnotic phenomena,
 - Motor automatisms (automatic writing and speech),
 - Artificial sensory automatisms (crystal visions).
- (3) Pathological states; such as,
 - The hysterical state and its manifestations,
 - Trances,
 - Obsessions,
 - Hallucinations,
 - Deliriums,
 - Alterations of character,
 - Multiple personalities,
 - Epileptoid states, etc.

I think we may also, though perhaps debatably, include certain insane states, like moral and certain forms of circular insanity. It is certain that abnormal phenomena like retrograde amnesia, hysterical anesthesia, hallucinations, alterations of character, etc., do not stand apart as facts without kinship to normal life; for phenomena, which are absolutely identical in form, content and behavior to the environment, whether spontaneous or artificially induced, occur as manifestations of the activity of the health mind. Thus certain types of normal amnesia may, in every way, give the same reactions and show the same relations to the personal consciousness as abnormal amnesia; normal absentmindedness as abnormal abstraction; crystal visions as hysterical

visions; normal or induced somnambulism as hysterical somnambulism; post-hypnotic suggestion and fixed ideas, automatic writing, and the dowsing-rod as the motor automatism and fixed ideas of disease. The difference between normal and abnormal dissociated states probably depends upon differences in the lines of disaggregation, psychical and physiological, and not upon the differences of process.

If Virchow's great generalization is true, namely, that disease is only life under altered conditions, we may say that the phenomena of abnormal psychology are only the normal processes of the mind and brain submitted to changed conditions. One great vantage-point of abnormal psychology is that by altering the conditions at will, as we often can do, we can study the alterations in the normal processes and thus find out what those processes are.

It has been, indeed, through a study of the abnormal, that is, a study of natural forces under altered conditions, that the physical sciences have received their development. It was by such a study of abnormal phenomena that Galileo was able to demonstrate the laws of inertia and of falling bodies; that Archimedes proved the theory of his lever, and that Pascal demonstrated his hydrodynamic paradox. In fact, all physical research depends upon the study of abnormal phenomena.

The Mind not a Unity

One of the great truths taught by abnormal psychology is that while the mind under ordinary conditions is for practical purposes a unity, under altered conditions it may cease to be a unity, and may exhibit multiple activity of a complex sort. It is even questionable whether under habitual conditions it is ever an absolute unity, whether *within certain limitations* it does not always exhibit a certain degree of multiplicity. It remains a problem, which I have thought well worthy of special consideration at this time, to investigate what those limitations are.

Influence of the Mind on the Body

Again, considered from the two points of view of dissociation and automatism, we are able to approach those puzzling problems which belong to practical medicine and which have long baffled clinical research. From the earliest times to these days of scientific skepticism about the veridity of phenomena which cannot be explained, the influence of the mind on the body for ill or for good has been and is recognized. Its influence for evil is evident in the nervous manifestations which mimic organic disease, in the per-

verted functioning of the organs of the body, and even, in its deleterious effect, upon organic pathological processes; its influence for good, in the dissipation of these same manifestations and perversions through faith-cures, fads, modern therapeutic suggestion in its various forms and mental hygiene. The lack of precise knowledge of the psychology of these states and of the *modus operandi* of the therapeutic agency employed has given rise to all sorts of pseudo-scientific therapeutic systems (including the misuse of drugs), and to the growth of dogmas, philosophies, and religions. The hopeless muddling of even the educated medical mind in this field of abnormal psychology is made manifest by a casual perusal of the standard text-books on medicine as well as the latest monographs on mental therapeutics. In the laws of dissociation, weakened synthesis, and automatism, abnormal psychology offers a basis upon which to support an intelligible explanation of these perplexing phenomena — slight as is our knowledge of the details of these processes. Thus in the automatic activity of subconscious fixed ideas we have a demonstrated casual factor in many so-called hysterical phenomena (attacks, tics, anesthetics, etc.); and in the nervous radiations from these subconscious automatisms down through the lower nervous centres we find the origin of various disturbances of the body, as when subconscious, or partially subconscious, emotional states excite cardiac, vaso-motor, secretory, and other visceral derangements.

Hysteria

The study of abnormal psychology has completely revolutionized our conception of that remarkable disease, hysteria, as much so as the discovery of germs has altered the surgical conception of inflammation. We understand to-day that it is not only a disease of the mind, but more precisely that fundamentally it is a splitting of the personality with or without a doubling of consciousness and automatism. We are still, however, entirely in the dark regarding the *modus operandi* of many of its manifestations. The exact mechanism, for instance, by which such phenomena as contractures, epileptiform seizures, and vaso-motor disturbances are brought about, though recognized as dissociated automatism, remains a problem for the future.

Character

Another problem which must be approached along these same lines is the modification of character which occurs in diseased conditions like hysteria, particularly that special type known as disintegrated multiple personality, and in certain psychoses like

circular and so-called moral insanity. The lesser states of depression and exaltation as commonly observed in such conditions, each accompanied or represented by altered points of view of the individual, when closely studied seem not to differ essentially from the similar conditions experienced by normal individuals and called *moods*. These alterations of character can be studied most advantageously in disintegrated personality where they can be watched as they take place under the very eye of the observer. They may include even changes in the physiological reactions, like the effect of alcohol, tobacco, sunlight, and the environment, and may or may not be accompanied by alterations of memory. Thus, to take an actually observed example, an individual at one moment amiable, religious, forbearing, the typical saint of literature, one who loves the quiet idealism and subdued light of the cloister, and whose moral and physiological tastes lead her to dislike coffee, cigarettes, wine, the glare of sunlight, gaudy fashions of dress, and a score of other pleasures of the flesh, becomes suddenly, in a moment of time, strong, resolute, "quick and sudden in quarrel," without religious tastes, one who delights in cigarettes, wine, the pleasure of the table, gay fashions of dress, and above all, in the strenuous Rooseveltian life. More than this, the character of an individual of this instability can be modified almost at will by artificial methods, or indirectly through the effect of fatigue and emotion. A certain number of the traits of one state being swapped for those of another, and *vice versa*.

Similar alterations of character have been artificially brought about by one experimenter in an individual with an apparently healthy nervous system, five different character states being obtained without changes of memory.

Such phenomena as these raise the problem of what is character, or more specifically, what is the fundamental process which brings about the alterations observed in special diseased conditions? The data at our disposal do not allow us to answer completely these questions, but we have enough facts at hand to show that a very large share in the process must be attributed to either psychical dissociation, or incapacity to make complete syntheses, in consequence of which the "personal perceptions" are very much restricted.

The fact that the same sort of alterations occur in the profound psychoses, in hysteria, and even in the moods of normal life, suggest that all are different types of disaggregation of the field of consciousness and perversions of the same mechanism, though the exciting cause may be different in each case.

The problems of functional dissociation, abnormal syntheses and automatisms belong to those which are fundamental to ab-

normal and therefore normal psychology. We enter upon more debatable ground when we try to determine the exact nature of these processes and give greater precision to our knowledge. Are the anesthetics, amnesias, and other forms of dissociation, for instance, to be classified, as held by Dr. Janet, as "failure of personal perception," that is, simply as special types of normal absent-mindedness, or must some physiological principle be invoked. This is a question of interpretation of the observed facts, and it seems to me is one which we are not in a position as yet to answer definitely, although, as I shall later point out, we can frame a reasonable hypothesis.

II. *Do Subconscious States habitually exist normally, or are they always either Artifacts or Abnormal Phenomena?*

I have already referred to the doubling of the mind and the formation of subconscious states that may result from this dissociation, even to the formation of a second personality. Now, if abnormal dissociation is only an exaggeration, or perversion of normal dissociation, the question arises, To what extent is there a division of the healthy mind of such a character as to give it multiplicity? Are the well-known abnormal dissociations and automatisms, *i. e.* the manifestations of abnormal subconscious processes, merely perverted types of similar processes which go on in every healthy mind? This is one of the most pressing problems for abnormal psychology to settle, for the idea that there is a subconscious mental life of elaborate activity which habitually plays a large part in all our mental processes has received such wide acceptance that it shows evidence of dominating psychological thought, and has even furnished a groundwork for a new philosophy. As a problem in dissociation and automatism, I propose, therefore, to inquire to what degree this hypothesis is justified by actually demonstrated data in our possession to-day.

The problem may be thus stated: Do subconscious states habitually exist normally, or are they always either artifacts or abnormal phenomena? If they form a part of the normal mind, what is the extent of the subconscious field? There is a very wide tendency at the present day to account for a large variety of phenomena, including both normal and abnormal experiences, by what used to be called "unconscious cerebration" but which now is spoken of as "subconscious thought" or the "secondary consciousness."

Now at the outset, in approaching this problem, we should have a clear idea of what is meant by subconscious ideas and their relation to the personal consciousness. It is difficult to state the theory of a secondary consciousness in a way that will be accept-

able to all students, for probably no two observers are agreed as to the interpretation of the facts, or, if the fundamental notion be accepted, whether the theory includes a limited or a large category of facts. All, however, are agreed that, *under certain artificially induced or abnormal conditions*, correlated with our brain-processes at any moment of time, there may be a certain number of elementary conscious states of whose existence we are ignorant, but which nevertheless coexist with that habitual waking consciousness which we term our self, or our own personality.

Now as to the *conditions* under which this secondary consciousness develops, and to its *extent* — the number of sensations, emotions, and other psychical states composing it, and, above all, the degree to which they are organized into a self-acting system (or personality) — there is considerable difference of opinion, so that there may be said to be several theories of the secondary consciousness, according to the point of view of the writer, and the interpretation given to the accepted facts. While all agree that under *special* conditions every mind may be made up of certain states of which we are conscious and certain states of which we are not conscious, some think that in *healthy* minds the secondary consciousness — if existent at all — is limited to only a number of more or less dissociated and isolated states, like sensations and perhaps emotions, without being synthesized into a personal self-unity, or even self-acting system. Others think that these dissociated states are always woven into a systematized unity and are capable of considerable intellectual and independent activity. Some think that these secondary states play but a small subordinate part in our mental lives; others think that they have a very large share in our daily acts, particularly in those acts to which we do not give our conscious volition (habit acts, absent-minded acts, etc.). Still others seek to explain our highest intellectual feats through this secondary consciousness. It will be borne in mind that we are now speaking of normal healthy minds. In diseased minds, it is agreed by all that the psychical states making up this secondary consciousness may become highly organized into a self-acting system and become capable of playing a rôle almost as controlling and independent as the habitual self. But some (Janet) think a doubling of consciousness is always a sign of disease.

Now subconscious ideas are dissociated ideas — dissociated from the main system of ideas which make up the personal consciousness. They are thrown off, so to speak, as satellites may be supposed to be thrown off, from their planet. The term "subconscious" is an unfortunate one, for it is metaphorical, and, while descriptive does not precisely express the true relation of these ideas to the personal

consciousness, extra-conscious, concomitant, or better, dissociated, are more exact terms. Now being dissociated from our personal consciousness, we are ignorant of them. Our knowledge of the existence of such dissociated mental states is largely derived from a study of pathological and artificially induced conditions, where their presence can be positively and accurately determined. The researches of recent years have proved very conclusively not only that the mind may be split in two in such a way that certain groups of ideas may be dissociated from the main consciousness, but that a number of these dissociated states may become synthesized among themselves, and that in this way is formed a second consciousness capable of a certain amount of activity. This activity may be manifested contemporaneously with that of our personal consciousness. There is then a doubling of consciousness. The mind becomes dual. Thus in the subject of disintegrated personality just referred to, known as "The Misses Beauchamp," a secondary group of dissociated states has existed for many years contemporaneously with the personal consciousness. These secondary states are so extensive and are so well organized into a personality that I have been able to obtain an autobiography of the subconscious life of this concomitant personality, disclosing a mental life which claims to have run along side by side with, but unknown to, the personal self from childhood to the present day. The subject is twenty-eight years of age. Similar though less extensive manifestations of a double life are common as phenomena of hysteria. In the automatic writing and speech of mediums and of psychological experiment, in the dowsing-rod, in so-called post-hypnotic phenomena, and in the automatic acts of artificial and spontaneous abstraction, we have the same manifestations of the splitting of the mind and the formation of an extra-conscious self of which the personal consciousness is ignorant. The dissociated states may or may not take on contemporaneous activity. If they do so, the secondary phenomena thus produced are called *automatisms*, as they occur outside the cognition of the personal self. They form the subconscious fixed ideas of hysteria now so well known. When the dissociated ideas include the kinesthetic and sensory spheres we have hysterical paralyses and anesthetics. At times these dissociated ideas break out in insurrections, kick up didos, and turn our peaceful mental arrangements topsy-turvy. We then have the hysterical attack.

Now allowing for such differences of opinion as have been already stated, there still seems to be a tacit acquiescence on the part of many psychologists in the theory that in normal healthy minds similar dissociated ideas of greater or less complexity have their place and play a well-regulated part in the mental economy. In other words, according to this theory, the normal mind is not a unity

any more than the hysterical mind. It requires but a slight extension of this theory to assume, as some do, that these dissociated mental states become normally synthesized into a second consciousness of considerable intellectual capacity, which takes part in our every-day intellectual processes. In every mind the activity of the primary consciousness is supposed to be accompanied by that of a secondary consciousness. On the basis of actually substantiated data, one would think that this was as far as the hypothesis could be logically carried, but the fact that we are not conscious of dissociated ideas gives a certain mysticism to their existence and has offered a temptation to extend further the hypothesis until, in the hands of certain of its advocates, it has outgrown even all demonstrated pathological facts. The subconscious ideas, instead of being mental states dissociated from the main personality, now become the main reservoir of consciousness and the personal consciousness becomes a subordinate stream flowing out of this great storage-basin of "subliminal" ideas as they are called. We have within us a great tank of consciousness, but we are conscious of only a small portion of its contents. In other words, of the sum total of conscious states within us, only a small portion forms the personal consciousness. The personal self becomes even an inferior consciousness emerging out of a superior subliminal consciousness present in a transcendental world, and this subliminal consciousness is made the source of flights of genius on the one hand, while it controls the physical processes of the body on the other. It is hardly necessary to follow this new "tank" hypothesis into its different applications. I merely refer to it as it has unquestionably colored the orthodox conception of subconscious ideas. Thus Professor Stout,¹ while contending against this doctrine, himself apparently influenced by it, postulates normal dissociated states (he adopts the term "subliminal") and gives them functions of wide scope.

"Consider," he says, "the process of recollecting a name. . . . It may happen that we fail to revive the name while we are trying to do so, and that it suddenly emerges into consciousness after an interval during which we have been occupied with other matters or have been asleep. This implies that our conscious effort has set going a subliminal process which continues after the conscious effort has ceased."

Professor Stout then goes on to argue that our conscious process has a way of exciting these dissociated states into trains of thought of which we are wholly unconscious and which solve our problems for us while we attend to other things.

"In such cases" [solving problems], he says, "conscious endeavor to find an ideal combination which shall satisfy certain conditions

¹ *The Hibbert Journal*, October, 1903.

serves only to set in operation subliminal processes which may or may not yield the requisite result. Here also the process may continue after the consciousness which prompted it ceased. The ordinary man no less than the man of genius may find that what relatively to *him* are original ideas develop while his thoughts are occupied with disconnected topics, or even while he is asleep. In general, we take an utterly false view of mental construction when we regard it as a mere putting-together of data already present in consciousness analogous to the putting-together of the parts of a puzzle spread out on the table before us."

It seems to me that these are pure assumptions. As far as my own conscious experience goes, I am compelled to agree with Mr. Andrew Lang,¹ in that as "an ordinary man" I do not find that my conscious activity appeals to "anything else" but my own conscious processes, or that I am conscious of any such easy way of settling my own problems. As an ordinary man, I do not find I can rely upon any other consciousness to write this address but the thoughts which I laboriously elaborate.

This theory of the normal occurrence of subconscious dissociated thought seems to have arisen as an interpretation of certain well-known but exceptional spontaneous experiences of the kind which Professor Stout accepts as evidence of normal subconscious mental activity, but the theory has a more substantial basis in data which have been obtained through direct objective experimentation. These include (1) various hysterical phenomena, (2) hypnotic experiments, (3) various motor automatisms, particularly automatic writing, and (4) phenomena of absentmindedness or abstraction. A critical analysis of these data will show that they do not permit of inferences applicable to normal and habitual conditions.

(1) That secondary subconscious states, capable of being synthesized into a self, may be developed by disease is a well-attested observation. But, being pathological, they are evidence only of the abnormality of subconscious states.

(2) As to hypnotic states, it is sometimes assumed that the hypnotic self represents a persistent consciousness having a continuous existence after the awakening of the personal consciousness. There is no evidence for this. The hypnotic self is a dissociated state of the waking consciousness. On awaking the synthesis of the original self is again made and the hypnotic dissociation ceases to exist. Nor is there any particular hypnotic state. There may be almost any number of such states in the same individual — as many as there are possible states of dissociation. In the second place, hypnosis is an artifact — an artificial dissociation, not a state of normal life. The phenomena of post-hypnotic suggestion, which are entirely

¹ *The Hibbert Journal*, April, 1904.

phenomena of subconscious processes, are likewise artifacts, produced by the methods of the experiment. They prove that the mind may be artificially made to exhibit duality but not that this is true of normal mental life.

(3) As to the evidence from automatic writing and similar phenomena, it seems to have been overlooked that these phenomena too are artifacts. Although they are plainly manifestations of dissociation of consciousness and automatism of the dissociated elements, nevertheless this dissociation is the product of the conditions of the experiment. Abstraction, which means dissociation of a greater or less degree, is induced, and suggestion directly excites the phenomena. But all such experiments have great significance in another respect. The ease with which the mind, in perfectly healthy persons, can be dissociated, and the dissociated states synthesized into an autonomous system, shows that subconscious synthesized states are not always evidence of disease, as maintained by Janet, though they may be artifacts, but that the whole is dependent upon a physiological process. When a physiological stimulus, like the mere sound of a spoken word, a suggested idea, is capable of inciting a dual activity of the mind in healthy university students, the process is unintelligible unless it is psycho-physiological, that is to say, a normal reaction of the mind to specially devised stimuli. When critically examined, then, the experimental evidence which is relied upon to establish subconscious ideas as normal processes of mentation is found to be fallacious. The resulting phenomena are made subconscious by the very conditions of the experiment. For this reason the problem is impossible to solve by the usual experimental methods. There is, however, some experimental evidence of a different sort which may be utilized, and which I propose presently to point out.

(4) The phenomena of absentmindedness, or abstraction, a normal function, indicate both dissociation and automatism. It is not difficult to demonstrate experimentally that auditory, visual, tactile, and other images, which are not perceived by the personal consciousness during this state, may be perceived subconsciously. Thus, under proper precautions, I place various objects where they will be within the peripheral field of vision of a suitable subject, C. B. Her attention is strongly attracted listening to a discourse. The objects are not perceived. She is now hypnotized and in hypnosis describes accurately the objects, thus showing that they were subconsciously recognized. It is the same for auditory perceptions of passing carriages, voices, etc. Likewise, on the *motor* side the numerous absentminded acts of which we are not conscious show intelligent subconscious automatism. C. B., in hypnosis, remembers each step of such an act (putting a book in the bookcase),

of which she is completely oblivious when awake. This duality of the mind in normal absentmindedness has been pointed out by various observers. Its phenomena simulate those of artificial abstraction as they occur in automatic writing and hysterical states. There is nothing surprising in this as the term "absentmindedness" means dissociation of consciousness,—a failure to perceive that which before was perceived, and a failure to be conscious of acts intelligently performed. On the other hand, normal absentmindedness is a distinctly special condition. We don't go about in an absent-minded state, or as if we had lost our heads, when we have work to be done. Absentminded phenomena are manifestations of the temporary disintegration of the personal self, and doubling of consciousness, but not evidence of the persistence during the ordinary waking life of subconscious states. It does not follow that on waking from reverie complete synthesis does not take place. But here the significant fact, the most significant of all, should not be lost sight of, that in the normal process of abstraction we find evidence of the existence of a normal prearranged mechanism for dissociating consciousness and producing subconscious states. Dissociation is plainly a function of the mind or brain.

Now, the nub of the problem is, in healthy persons are these subconscious states limited to absentmindedness? and, if not, what part do they play in the mental economy? Indeed, whether so limited or not, what is their extent? *i. e.* (a) are they purely isolated phenomena, isolated sensations and perceptions? or (b) are they synthesized, as imagined by Professor Stout, into logical subconscious processes of thought, capable of sustained action, and as imagined by some sufficiently complex to form a personality—something that we are justified in calling a subconscious self? or (c) are subconscious states when synthesized always either artifacts or pathological?

The question is at the root of many important problems in abnormal psychology, but is difficult to answer by experimental methods, owing to the danger of artifacts. In illustration of this danger I may point to the phenomena of subconscious solution of arithmetical problems which are sometimes cited in evidence. In favorable subjects, as in an instance under my own observation, it is not difficult by means of suggestion in hypnosis to obtain the solution of arithmetical problems during the waking state by some other consciousness than that of the waking personality. For example, while in hypnosis, two numbers are given to be added or multiplied, say $453 + 367$, or 4326×3 , to take actual examples, and the subject waked instantaneously the moment the last figure is given. The addition or multiplication is correctly solved subconsciously, the subject not having any conscious knowledge that any

task whatever has been set. The exact method of mentation by which the problem is extra-consciously solved is learned by catechizing the hypnotic personality. But such experiments are plainly artifacts. The dissociation and automatism are the products of suggestion. The results are of value, however, as cannot be too often insisted upon, in that they show the ease with which duality of the mind may be effected by what is plainly a psycho-physiological stimulus, a suggested idea. But to obtain subconscious phenomena free from artifice such phenomena must be *spontaneous*. Information regarding the presence and character of subconscious states at any given time can be easily obtained owing to the well-known fact that ideas¹ dissociated from the personal consciousness awake may become synthesized with this same consciousness in hypnosis, and then be remembered. A person in hypnosis may thus be able to analyze and describe the ideas which were spontaneously present as an extra-consciousness when awake, but which were not then known to the personal consciousness. This method is far more accurate than the device of tapping the subconsciousness by automatic writing, though the same in principle. I am obliged here to refer to a series of observations of this kind which I have personally made with a view of obtaining light upon this question, as I know of no others that have been limited to spontaneous phenomena and are not open to the objection of artifacts. A systematic examination² was made of the personal consciousness in hypnosis, regarding the perceptions and content of the secondary consciousness during definite moments, of which the events were prearranged or other-

¹ This word is used as a convenient expression for any state of consciousness.

² I have adopted this custom of treating the hypnotic self as a sane consciousness, instead of a freak affair, fit only to be played with and to be made to perform all sorts of antics. I am certain this method of study will throw more light on the composition of normal consciousness than that of inducing hallucinations and other artifacts. The hypnotic self, if treated like a reasonable being, will be found able to give important information. It knows the waking self, it knows its own thoughts, and it knows the thoughts of the secondary consciousness. It can give very valuable information about each. On the other hand, it is very easily disintegrated by suggestion; and ideas, hallucinations, and what not, are very easily created in it. Experiments of this latter kind have their use, but for the purpose of learning the mode of the working of the normal mind, a still greater advantage is to be obtained by treating it as a rational consciousness capable of accurately observing and imparting information derived from its own experiences.

I would here insist that it is a mistake to confuse the personal consciousness in hypnosis with the secondary consciousness when such exists. They are not identical or coextensive. An hypnotic self, as ordinarily observed, is still the personal consciousness, but in hypnosis the previously dissociated states are synthesized with this self and remembered. The whole becomes then a unity, and the hypnotic personal consciousness remembers the formerly dissociated ideas and its own and speaks of them as such. This has given rise to the wrong interpretation that identifies the hypnotic self with the secondary or subconsciousness. But the hypnotic self includes a large part of the waking personal self. On waking, this part regains the rest of its own syntheses and loses the second states. A failure to recognize these facts has led to much confusion in interpreting abnormal psychological phenomena.

wise known, the subject not being in absentmindedness. It is not within the scope of an address of this sort to give the details of these observations, but in this connection I may state briefly a summary of the evidence, reserving the complete observations for future publication. It was found that —

(1) A large number of perceptions — visual, auditory, tactile and thermal images, and sometimes emotional states — occurred outside of the personal consciousness, and therefore the subject was not conscious of them when awake. The visual images were particularly those of the peripheral vision, such as the extra-conscious perception of a person in the street, who was not recognized by the personal waking consciousness; or the perception of objects intentionally placed in the field of peripheral vision and not perceived by the subject, whose attention was held in conversation. Auditory images of passing carriages, of voices, footsteps, etc., thermal images of heat and cold from the body, were similarly found to exist extra-consciously, and to be entirely unknown to the personal waking consciousness.

(2) As to the content of the concomitant (dissociated) ideas, it appeared by the testimony of the hypnotic self that as compared with those of the waking consciousness the secondary ideas were quite limited. They were, as is always the experience of the subject, made up for the most part of emotions (*e. g.*, annoyances), and sensations (visual, auditory, and tactile images of a room, of particular persons, people's voices, etc.). They were not combined into a logical proposition, though in using words to describe them it is necessary so to combine them and therefore give them a rather artificial character as "thoughts." It is questionable whether the word "thoughts" may be used to describe mental states of this kind, and the word was used by the hypnotic self subject to this qualification. Commonly, I should infer, a succession of such "thoughts" may arise, but each is for the most part limited to isolated emotions and sensorial images and lacks the complexity and synthesis of the waking mentation.

(3) The memories, emotions, and perceptions of which the subject is not conscious when awake are remembered in hypnosis and described. The thoughts of which the subject is conscious when awake are those which are concentrated on what she is doing. The others, of which she is not conscious, are sort of side thoughts. These are not logically connected among themselves, are weak, and have little influence on the personal (chief) train of thought. Now although when awake the subject is conscious of some thoughts and not of others, both kinds keep running into one another, and therefore the conscious and the subconscious are constantly uniting, disuniting, and interchanging. *There is no hard and fast line*

between the conscious and the subconscious, for at times what belongs to one passes into the other, and vice versa. The waking self is varying the grouping of its thoughts all the time in such a way as to be continually including and excluding the subconscious thoughts. The personal pronoun "I," or, when spoken to, "you," applied equally to her waking self and to her hypnotic self, *but these terms were not applicable to her unconscious thoughts, which were not self-conscious.* For convenience of terminology, it was agreed arbitrarily to call the thoughts of which the subject is conscious when awake the *waking consciousness*, and the thoughts of which when awake she is not conscious the *secondary consciousness*. In making this division the hypnotic self insisted most positively on one distinction, namely, that the secondary consciousness was in no sense a *personality*. The pronoun "*I*" could not be applied to it. In speaking of the thoughts of this second group of mental states alone, she could not say "I felt this," "I saw that." These thoughts were better described as, for the most part, unconnected, discrete sensations, impressions, and emotions, and were not synthesized into a personality. They were not therefore self-conscious. When the waking self was hypnotized, the resulting hypnotic self acquired the subconscious perceptions of the second consciousness, she then could say "*I*," and the hypnotic "*I*" included what were formerly "subconscious" perceptions. In speaking of the secondary personality by itself, then, it is to be understood that self-consciousness and personality are always excluded. This testimony was verified by test instances of subconscious perception of visual and auditory images of experiences occurring in my presence.

(4) Part played by the secondary consciousness in

(a) Normal mentation. The hypnotic self testified that the thoughts of the secondary consciousness do not form a logical chain. They do not have volition. They are entirely passive and have no direct control over the subject's voluntary actions.

(b) Part played by the secondary consciousness in absentmindedness. (1) Some apparently absentminded acts are only examples of amnesia. There is no doubling of consciousness at the time. It is a sort of continuous amnesia brought about by lack of attention. (2) In true absentmindedness there does occur a division of consciousness along lines which allow a large field to, and relatively wide synthesis of the dissociated states. The personal consciousness is proportionately restricted. The subconscious thoughts may involve a certain amount of volition and judgment, as when the subject subconsciously took a book from the table, carried it to the bookcase, started to place it on the shelf, found that particular location unsuitable, arranged a place on another shelf, where the book was finally placed. No evidence, however, was obtained

to show that the dissociated consciousness is capable of wider and more original synthesis than is involved in adapting habitual acts to the circumstances of the moment.

(c) Solving problems by the secondary consciousness. So much is to be found in the literature about subconscious solutions of problems that the following testimony of the hypnotic personality is of interest:

"When a problem on which my waking self is engaged remains unsettled, it is still kept in mind by the secondary consciousness, even though put aside by my waking self. My secondary consciousness often helps me to solve problems which my waking consciousness has found difficulty in doing. But it is not my secondary consciousness that accomplishes the final solution itself, but it helps in the following way. Suppose, for instance, I am trying to translate a difficult passage in Virgil. I work at it for some time and am puzzled. Finally, unable to do it, I put it aside, leaving it unsolved. I decide that it is not worth bothering about and so put it out of my mind. But it is a mistake to say that you put it *out* of your mind. What you do is, you put it *into* your mind: that is to say, you don't put it out of your mind if the problem remains unsolved and unsettled. By putting it *into* your mind I mean that, although the waking consciousness may have put it aside, the problem still remains in the secondary consciousness. In the example I used, the memory of the passage from Virgil would be retained persistently by my secondary consciousness. Then from time to time a whole lot of fragmentary memories and thoughts connected with the passage would arise in this consciousness. Some of these thoughts, perhaps, would be memories of the rules of grammar, or different meanings of words in the passage, in fact, anything I had read, or thought, or experienced in connection with the problem. These would not be logical connected thoughts, and they would not solve the problem. My secondary consciousness does not actually do this, *i. e.*, in the example taken, translate the passage. The translation is not effected here. But later when my waking consciousness thinks of the problem again, these fragmentary thoughts of my secondary consciousness arise in my mind, and with this information I complete the translation. The actual translation is put together by my waking consciousness. I am not conscious of the fact that these fragments of knowledge existed previously in my secondary consciousness. I do not remember a problem ever to have been solved by the secondary consciousness. It is always solved by the waking self, although the material for solving it may come from the secondary. When my waking consciousness solves it in this way, the solution seems to come in a miraculous sort of way, sometimes as if it came to

me from somewhere else than my own mind. I have sometimes thought, in consequence, that I had solved it in my sleep."

The subject of these observations was at the time in good mental and physical condition. Criticism may be made that the subject being one who had exhibited for a long time previously the phenomena of mental dissociation, she now, though for the time being recovered, tended to a greater dissociation and formation of subconscious states than does a normal person, and that the subconscious phenomena were therefore exaggerated. This is true. It is probable that the subconscious flora of ideas in this subject are richer than in the ordinary individual. These phenomena probably represent the extreme degree of dissociation compatible with normality. And yet, curiously enough, the evidence tended to show that the more robust the health of the individual the more stable her mind, the richer the field of these ideas. However this may be, the very exaggerations increase the value of the evidence for the limitation of the extent, independence, and activity of the subconscious states. If in such a subject we do not find, as is the case, evidences of subconscious automatism, excepting in absent-mindedness, it is highly improbable that such activity exists in a perfectly healthy subject.

These observations are only suggestive, not conclusive. To solve the whole problem of concomitant, extra- or subconscious states, further and numerous observations are required, but conducted under conditions which shall exclude artifact and abnormal states. It is interesting, however, here to notice that the direct evidence derived from these observations confirms the theoretical scheme of personal perception offered by Dr. Janet. That scheme is almost a literal representation of the facts as obtained by this method of experimentation.

Summarizing all the evidence which is at our disposal to-day, derived from actually observed facts, we may say, that *while a greater or less number of isolated dissociated states are constantly occurring under normal conditions, there is no satisfactory evidence that they normally become synthesized among themselves and exhibit automatism excepting in states of abstraction and as artifacts.*

A study of subconscious states is highly important for the determination of the mechanism of consciousness, and I am convinced that such studies will throw much light upon the problem of how we think.

At this time considering the fundamental importance of the problem of the subconscious, it has seemed to me wise to stop and review the evidence for the existence of normal dissociated mental states, and this for the further reason of the enormous part which these states play in pathological conditions and because of the

credence which has been given to the theory of a normal subconscious self.

If the foregoing review is sound, it would seem that great caution is required in applying the inductions derived from a study of abnormal subconscious phenomena to normal conditions, and that the tendency has been to attribute too extensive a field and too great capabilities to this hidden mental life. The facts at our disposal do not support the hypothesis of a normal subconscious mind excepting within very strict limitations.

Nature of the Dissociating Process

But the problem of the subconscious brings into stronger relief the still broader problem. What is the nature of the dissociating process by which the duality is brought about? Is the explanation to be found in psychical or in physiological laws? It was a great advance to show, as has been done, that a large number of abnormal functional phenomena like anesthesia, amnesia, paralysis, aboulia, are all different types of the splitting of consciousness. They must, therefore, be due to some dissociating process: Janet interprets these different mental conditions as *chronic forms of absentmindedness*, a persistent failure of the personal consciousness to make more than a few syntheses. This failure is the consequence of exhaustion. The dissociation is, therefore, primary and the resulting automatism secondary. Janet is careful to point out that this is not an explanation. It is in fact only a classification. Breuer and Freud, on the other hand, would make the dissociation secondary to the development of what they call the hypnoid state, a group of fixed ideas, which are unable to make the synthesis with the personal consciousness.

None of these theories are satisfactory as explanations. Absentmindedness is not only insufficient as an explanation of the process, but even as a classification fails to take into account the differences in phenomena, such as the dissociation brought about as artificial abstraction by merely whispering in the subject's ear. I whisper in the ear of B and straightway she does not hear, but inquires, "Where have you gone to?" I speak aloud and she hears again. (The whispered voice is of course heard by a momentarily dissociated group of states which respond.) Why, if this phenomenon is the same as absentmindedness, and is due to exhaustion, cannot the "personal perception" (Janet) synthesize the whispered voice as well as the conversational voice? Again, multiple personalities with alternating memories are not exhausted, but can make any amount of other syntheses, including their own respective memories: Why not also with the lost memories of

another personality? There is not a failure of *perception* of the ego, but a splitting of the ego itself. What has produced it?

Any theory to be sufficient must take into consideration all the facts not only of abnormal but of normal dissociations, including those artificially induced by experimental devices (suggestion, automatic writing, etc.). When we do this we find in the first place, as already pointed out, facts indicating a normal process for dissociating consciousness, through which process normal and abnormal phenomena may be correlated. Normal absentmindedness, certain types of normal amnesia, sleep, spontaneous somnambulism, hypnosis, etc., can experimentally be shown to be types of dissociation, splitting of the ego, differing from one another in the extent and pattern of the fields of consciousness remaining to the personal ego. The process which brings these states about is probably fundamentally the same as that governing the abnormal splitting of consciousness.

In the second place a study of abnormal and induced dissociation shows that, while normal syntheses and automatisms largely follow psychological laws, the lines of *disaggregation* do not follow the lines mapped out by these laws. For instance, they do not follow the boundaries of associated ideas.

The hand that performs automatic writing becomes anesthetic, though the subconscious ideas which control the hand have nothing to do with tactile sensation. A subconscious fixed idea of fear of personal injury robs the personal consciousness of our subject M—1¹ of perceptions from the peripheral field of vision and from one half of his body. In another subject all the memories for a certain epoch in her life disappear in consequence of a shock. An emotional shock in A. P., excited by a slight fall during a high-kicking act, robs the personal consciousness of the power to move the arm and leg which are rigid in contracture. In Madam D., a subject of Charcot and Janet, continuous amnesia for each succeeding moment of the day follows the announcement of a piece of bad news. There are no psychological associations in any of these examples between the ideas and the resulting dissociations, and psychologically we can find no reason why sensory and motor images are dissociated in one case, and memories in another. It would seem from the points of view of our present knowledge that we shall have to look for an explanation in some physiological process. All must admit that the final explanation must be in terms of the neuron, in the dissociation of the as yet unknown neuron systems which are correlated with the psychological systems. But without attempting such an explanation, what I wish to point out is that the data of abnormal

¹ *Boston Medical and Surgical Journal*, vol. CL, no. 25, pp. 674-678, June 23, 1904.

psychology go to show that the psychological disaggregation does not follow as much psychical as physiological lines. The cleavage is brought about by psychological influences — trauma — (ideas, emotions, etc.); but when the fracture occurs, it tends to follow the physiological map. Just as when a blow shatters a mineral, the lines of fracture follow the natural lines of crystallization, so, while a psychical trauma shatters a psycho-psychological system, the cleavage follows very closely the neuron association systems.

Thus when Louis Vivé passed into one state in which he had left hemiplegia, into another in which he had right hemiplegia, another with paraplegia, each with its own group of memories, the alterations can only be explained on the ground that these states were determined by some sort of physiological dissociating system. Likewise, when our subject M——l developed a complete amnesia for the English language, and understood and spoke only German, if we take into account all the phenomena, it would seem this amnesia was determined by physiological dissociation excited by a primarily conscious and later subconscious fear of injury.

Sally Beauchamp's general anesthesia is in no way the result of ideas psychologically in association with it. When B I and B IV exhibit a complete amnesia for each other's lives and exhibit their contradictory traits of character and physiological reactions, it must be because different neurons are brought into activity in each case.

B IV in hypnosis, while slightly groggy from ether, talks intelligently and narrates the history of an adventure of the preceding day. I suggest to her that she shall open her eyes, wake up and be herself, a suggestion I have given a hundred times successfully. She opens her eyes and straightway she does not know me, or her surroundings, or who she herself is. An enormous dissociation of psychologically associated ideas has taken place, whether as the effect of the ether or some other cause, I do not know, but according to psychological laws her syntheses should have been enlarged. I close her eyes again and she regains intelligence, remarking that — “when my eyes are open I do not know who I am.”

On the other hand, automatism and abnormal *syntheses* seem to be affected by psychical laws, particularly that of the law of association of ideas. Abnormal psychology then points strongly to the conclusion that there is a normal physiological dissociating mechanism which is the function of the nervous organization. It is this mechanism which brings about such spontaneous normal states as absentmindedness, sleep, normal induced states, like hypnosis; and through its perversions the dissociations underlying abnormal phenomena.

SHORT PAPER

PROFESSOR JOHN B. WATSON, of the University of Chicago, read a paper for this Section on "A Suggested Method in Comparative Psychology," in which a brief discussion of some of the most recent theories in reference to the teaching of animals by the perception of result, imitation, etc., was given, as well as the relative use of the senses in animals and lower organisms.

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THE MODERN RIGHTS OF MAN

Photogravure from the Painting by Charles Landelle.

The famous allegorical painting reproduced here, was originally exhibited at the Paris Exposition of 1889. The young man with his newly formulated "Rights of Man" (Droits de l'Homme) embodies the spirit of the French Revolution of 1789, which proclaimed these "Rights" ignoring the majesty of the Law and ignoring also that there can be no rights without duty and self-restraint. France learned to her sorrow after all the turmoil and bloodshed of the Revolution that the whole social system is founded on the rights of the whole community and on the duties and obligations we owe to each other.



DEPARTMENT XVI — SOCIOLOGY

(Hall 7, September 20, 4.15 p. m.)

CHAIRMAN: PROFESSOR FRANK W. BLACKMAR, University of Kansas.

SPEAKERS: PROFESSOR FRANKLIN H. GIDDINGS, Columbia University.

PROFESSOR GEORGE E. VINCENT, University of Chicago.

THE Chairman of the Department of Sociology was Professor Frank W. Blackmar, of the University of Kansas, who in opening the work of the Department said:

"It affords me great pleasure to call to order the first meeting of the Department of Sociology of this remarkable Congress and to introduce the eminent speakers provided for this occasion. We are to be congratulated on the rapid advance of the science of sociology during the past fifteen years. Perhaps there is no parallel to the progress in the United States of this science in our universities and colleges unless it is the rapid development of natural science within the last half-century.

"While sociology has made marvelous gains in the pedagogical world, its progress in the realm of pure sciences is less certain, although out of the numerous writings of learned men in Europe and America and the results of their investigations from many points of view, there is to be recorded substantial and positive gains to sociology as an independent and self-constituted science.

"The progress of sociology has been made by each investigator following a particular line of investigation from his own standpoint. As a result there is yet no common consensus of opinion as to the nature and scope of the science. But a stage of development has been reached, common to the growth of all sciences, when synthesis is necessary. What is needed now is harmony of all of the apparent conflicts of sociological theory. I say apparent conflicts, for I am sure that the differences of opinion that exist among scholars arise from independent individual investigation rather than from any vitally antagonistic views. Sufficient data have been gathered, sufficient truth discovered, adequate principles enumerated, and adequate laws demonstrated to permit the formulation of the science of sociology along definite lines easily recognized and cheerfully acknowledged by all. Recently our foremost sociologists have been making rapid progress in this way.

"The classification of the sciences of this Congress has done more to throw the subject into confusion than any other event of recent years. I regard it as a retrograde movement so far as sociology is concerned. I trust it will be considered by scientists as merely a temporary arrangement. To classify sociology as a mental science and to divorce it from concrete social studies, as in the present classification, is to narrow its scope, dwarf its usefulness, and imply that there is no place for a science of society called sociology. If such a course of classification is followed, sociology will eventually be considered as a feeble branch of psychology. But this must not be, for sociology has a greater service to humanity, a greater scope, and a greater destiny. No subjective classification arising from *a priori* assumptions, proceeding from a psychological source, will satisfy the demands of a working classification for science, which must of necessity arise from objective conditions. Comte performed a service in the classification of the positive sciences, but the course of scientific investigation since his time has been such as to cause a similar classification, *à la Comte*, to be neither desirable nor serviceable.

"Sociology must occupy an independent position, as the youngest sister of the social sciences, but in close touch with politics, ethics, political science, political economy, and history. Whatever abstractions may be used in formulating the science, it should not lose its method of concrete work. Hence, the sooner we can have a consensus of opinion as to its position, nature, and scope, the greater will be its progress. The sooner we can have a synthesis of the work already done, the sooner will sociology assume its rightful position as an independent and dignified science, with the unqualified respect of all students of man and nature."

THE CONCEPTS AND METHODS OF SOCIOLOGY

BY FRANKLIN HENRY GIDDINGS

[Franklin Henry Giddings, Professor of Sociology, since 1894, Columbia University. b. Sherman, Connecticut, March 23, 1855. A.B. Union College, 1877; A.M. *ibid.* 1889; Ph.D. *ibid.* 1897; LL.D. Oberlin, 1900. Journalist, 1877-1888; Lecturer, Political Science, Bryn Mawr College, 1888-89; Associate, *ibid.* 1889-91; Associate Professor, *ibid.* 1891-92; Professor, *ibid.* 1892-94; Lecturer on Sociology, Columbia University, 1890-94. Member of the American Economic Association; American Sociological Society; Philadelphia Academy of Natural Science; American Ethnological Society; Institut International de Sociologie, Paris. Author of *The Principles of Sociology* (French, Russian, Hebrew, Bohemian, Spanish, and Japanese translations); *Democracy and Empire*; *Inductive Sociology*; and other minor works.]

To set forth in a brief paper the fundamental conceptions of any modern science is a difficult task. The difficulty increases as we pass from the relatively simple sciences that have to do with inorganic matter, to the highly complex sciences of life and of mind. And when we come to the phenomena presented by aggregations of living beings — phenomena of the interaction of mind with mind, phenomena of the concerted activity of many individuals working out together a common destiny — we have a subject for scientific study too many-sided, too intricate, for description in a few comprehensive phrases, and the scientific study itself arrives at fundamental conceptions only after a long and extensive process of elimination. Fundamental conceptions in such a field are necessarily general truths, expressing the relations that endless facts of detail bear to one another, or to underlying groupings, processes, or causes. A brief account, therefore, of the fundamental conceptions of sociology, and of the methods available for the scientific study of society, must remorselessly exclude those concrete particulars that lend to our knowledge of collective life its preëminently real — its human — interest. It must be restricted to conceptions that are elemental, general, and in a degree abstract.

Conforming to this necessity, I shall group the fundamental conceptions of sociology in three divisions, namely: first, concepts of the subject-matter of sociological study, that is to say, of society; second, concepts pertaining to the analysis and classification of social facts, and incidentally to the corresponding subdivisions of sociological science; third, concepts of the chief processes entering into social evolution, and of the inferred causes.

The word "society" has three legitimate significations. The first is that of the Latin word *societas*, meaning "companionship,"

“good-fellowship,” “pleasurable consorting together,” or meaning the individuals, collectively regarded, that consort. Examples of society in this original sense are afforded by the commingling of familiar spirits at the tavern or the club, the casual association of chance acquaintances at the summer resort, the numberless more formal “functions” of “the season.” In the second signification of the word, “society” is a group of individuals coöperating for the achievement of any object of common interest or utility, as, for example, a merchant guild, an industrial corporation, a church, a Congress of Arts and Science. Finally, in the third signification of the word, “society” is a group of individuals dwelling together and sharing many interests of life in common. A nest of ants, a savage horde, a confederation of barbarian tribes, a hamlet or village, a city-state, a national state, a federal empire — all these are societies within the third and comprehensive definition of the term. A scientific conception of society must lie within the boundaries fixed by these three familiar meanings, but it must seize upon and make explicit the essential fact, whatever it may be, that is a common element in all social relations.

At the present time we find in sociological literature two competing conceptions of the essential nature of society. They are known respectively as the organic and the psychological conception.

The organic conception assumes that the group of individuals dwelling and working together is the true, or typical, society, and that it is as much a unity, although made up of individuals, as is the animal or the vegetable body, composed of cells and differentiated into mutually dependent tissues and organs. Sketched in bold outlines by Herbert Spencer in his essay on *The Social Organism* in 1860, the organic conception has been elaborated by Schäffle and Lilienfeld, and is to-day accepted as the working hypothesis of an able group of French sociologists, whose work appears in the proceedings of L’Institut international de Sociologie.

The psychological conception assumes that, whether or not the organic conception be true and of scientific importance, it fails to get to the bottom of things. It assumes that, even if society is an organism, there is necessarily some interaction of individual with individual, or some form of activity common to all individuals, which serves to bind them together in helpful and pleasurable relations, and that this activity, instead of being merely physical, like the cohesion of material cells, is a mental phenomenon. It assumes that all social bonds may be resolved into some common activity or some interactivity of individual minds. It is, in short, a view of society as a mode of mental activity.

This is the psychological conception in general terms. It takes,

however, four specific forms in attempting to answer the question: What definite mode of mental action is the most elementary form of the social relation?

According to the most pretentious of these answers, one that dates back to Epicurus and lies at the basis of all the covenant or social-contract theories of political philosophy, the psychological origin of society is found in a perception of the utility of association. It assumes that men consciously and purposely create social relations to escape the ills of a "state of nature" and to reap the rewards of coöperation. This rationalistic theory offers a true explanation of highly artificial forms of social organization in a civil, especially an industrial, state, but it throws no light upon the nature of elemental, spontaneous coöperation. For this we must turn to the other three conceptions—all of them, I venture to think, modernized forms of certain very ancient notions.

According to one of these, the most elementary social fact is seen in the constraining power, the impression, the contagious influence that an aggregation, a mass, of living beings exerts upon each individual mind. Society is thus viewed as a phenomenon closely allied to suggestion and hypnosis. This view of society is most fully set forth in the writings of Durkheim and Le Bon.

A third conception, identified with the life-work of our lamented colleague, Gabriel Tarde, assumes that impression, contagion, influence, as forms of the interaction of mind with mind, may themselves be accounted for. It explains them as modes of example and imitation. All society is thus resolved into products of imitation.

In strict psychological analysis these "impression" and "imitation" theories must be classed, I think, as scientifically developed forms of the "sympathy" theories of society, that may be traced back through the literature of political philosophy to very early days. They offer proximate explanations of the great social facts of resemblance, of mutuality, of solidarity; but do they, beyond a doubt, trace concerted activity back to its absolute origin? Above all, do they account not only for similarity, but also for variation, for the differentiation of communities into leaders and followers, for competition as well as for combination, for liberty as well as for solidarity?

The fourth conception, put forth some years ago by the present writer, should be classed as a developed form of the instinct theory, dating back to Aristotle's aphorism that man is a political animal. It assumes that the most elementary form of social relationship is discovered in the very beginning of mental phenomena. In its simplest form mental activity is a response of sensitive matter to a stimulus. Any given stimulus may happen to be felt by more

than one organism, at the same or at different times. Two or more organisms may respond to the same given stimulus simultaneously or at different times. They may respond to the same given stimulus in like or in unlike ways; in the same or in different degrees; with like or with unlike promptitude; with equal or with unequal persistence. I have attempted to show that in like response to the same given stimulus we have the beginning, the absolute origin, of all concerted activity — the inception of every conceivable form of coöperation; while in unlike response, and in unequal response, we have the beginning of all those processes of individuation, of differentiation, of competition, which, in their endlessly varied relations to combination, to coöperation, bring about the infinite complexity of organized social life.

It is unnecessary to argue that this conception of society not only takes account of individuality as well as of mutuality, but that also it carries our interpretation of solidarity farther back than the theories of impression and of imitation, since both impression and imitation must be accounted for — in ultimate psychological analysis — as phenomena of reciprocal, or interstimulation and response. Indeed, the very language that Tarde uses throughout his exposition tacitly assumes as much. Example is stimulus, the imitative act is response to stimulus. The impression that the crowd makes upon an individual is stimulus, and the submission, obedience, or conformity of the individual is response to stimulus. Moreover, the formation of the crowd itself has to be accounted for, and it will be found that, in many cases, the formation of a crowd is nothing more nor less than the simultaneous like-response of many individuals to some inciting event, circumstance, or suggestion. In short, impression, imitation, and conformity are specific modes, but not by any means the primary or simplest modes of stimulation and response; and some of the most important phenomena of concerted action can be explained only as springing directly from primary like-responses, before either imitation or impression has entered into the process.

This conception meets one further scientific test. It offers a simple and consistent view of the relation between social life and the material universe. It assumes that the original causes of society lie in the material environment, which may be regarded as an infinitely differentiated group of stimuli of like-response, and therefore of collective action; while the products of past social life, constituting the historical tradition, become in their turn secondary stimuli, or secondary causes, in the social process.

A mere momentary like-response by any number of individuals is the beginning of social phenomena, but it does not constitute a society. Before society can exist there must be continuous ex-

posure to like influences, and repeated reaction upon them. When this happens, the individuals thus persistently acting in like ways become themselves mentally and practically alike. But likeness is not identity. The degrees of resemblance or of difference in the manner of response to common stimuli manifest themselves as distinguishable types of mind and of character in the aggregate of individuals; while the differing degrees of promptitude and persistency in response have as their consequence a differentiation of the aggregate into leaders and followers, those that assume initiative and responsibility, and those that habitually look for guidance. These differences and resemblances have subjective consequences. Differing individuals become aware of their differences, resembling individuals become aware of their resemblances, and the consciousness of kind so engendered becomes thenceforth a potent factor in further social evolution.

Summarizing our analysis to this point, we may say that we conceive of society as any plural number of sentient creatures more or less continuously subjected to common stimuli, to differing stimuli, and to interstimulation, and responding thereto in like behavior, concerted activity, or coöperation, as well as in unlike, or competitive, activity; and becoming therefore, with developing intelligence, coherent through a dominating consciousness of kind, while always sufficiently conscious of difference to insure a measure of individual liberty.

Which of these various conceptions of the ultimate nature of the social relation shall in the long run prevail must depend upon a certain fitness to account for all the phenomena of social life in the simplest terms. That fitness can be determined only through the further evolution of social theory.

But whatever the finally accepted view may be, there are certain classifications of social facts that may be accepted as among the elementary notions of any sociological system.

And first there are types or kinds of societies. The broadest groupings correspond to the familiar demarkations made by Natural History. There are animal societies and human societies; and the human societies are further divided into the ethnic, or communities of kindred, and the civil, or communities composed of individuals that dwell and work together without regard to their blood-relationships.

More significant for the sociologist, however, is a classification based on psychological characteristics. The fundamental division now is into instinctive and rational societies. The bands, swarms, flocks, and herds in which animals live and coöperate, are held together by instinct and not by rational comprehension of the

utility of association. Their like-response to stimulus, their imitative acts, the frequent appearance among them of impression and submission, are all purely instinctive phenomena. Not so are the social relations of human beings. There is no human community in which instinctive like-response to stimulation is not complicated by some degree of rational comprehension of the utility of association.

The combinations, however, of instinct and reason are of many gradations; and the particular combination found in any given community determines its modes of like-response to stimulus and its consciousness of kind — establishes for it a dominant mode of the relation of mind to mind, or, as Tarde would have phrased it, of intermental activity. This dominant mode of intermental activity — inclusive of like-response and the consciousness of kind — is the chief social bond of the given community, and it affords the best distinguishing mark for a classification of any society on psychological grounds. So discriminated, the kinds of rational or human societies are eight, as follows:

(1) There is a homogeneous community of blood-relatives, composed of individuals that from infancy have been exposed to a common environment and to like circumstances, and who, therefore, by heredity and experience are alike. Always conscious of themselves as kindred, their chief social bond is sympathy. The kind or type of society, therefore, that is represented by a group of kindred may be called the Sympathetic.

(2) There is a community made up of like spirits, gathered perhaps from widely distant points, and perhaps originally strangers, but drawn together by their common response to a belief or dogma, or to an opportunity for pleasure or improvement. Such is the religious colony, like the "Mayflower" band, or the Latter-Day Saints; such is the partisan political colony, like the Missouri and the New England settlements in Kansas; and such is the communistic brotherhood, like Icaria. Similarity of nature and agreement in ideas constitute the social bond, and the kind of society so created is therefore appropriately called the Congenial.

(3) There is a community of miscellaneous and sometimes lawless elements, drawn together by economic opportunity — the frontier settlement, the cattle range, the mining camp. The newcomer enters this community an uninvited but unhindered probationer, and remains in it on sufferance. A general approbation of qualities and conduct is practically the only social bond. This type of society, therefore, I venture to call the Approbational.

The three types of society thus far named are simple, spontaneously formed groups. The first two are homogeneous, and are found usually in relatively isolated environments. The third is heterogeneous, and has a transitory existence where exceptional

economic opportunities are discovered on the confines of established civilizations.

Societies of the remaining five types are in a measure artificial, in part created by reflection — by conscious planning. They are usually compound, products of conquest or of federation, and, with few if any exceptions, they are of heterogeneous composition. They are found in the relatively bountiful and differentiated environments.

(4) A community of the fourth type consists of elements widely unequal in ability: the strong and the weak, the brave and the timorous, exploiters and the exploited — like enough, conquerors and conquered. The social bonds of this community are despotic power and a fear-inspired obedience. The social type is the Despotic.

(5) In any community of the fifth type, arbitrary power has been established long enough to have identified itself with tradition and religion. Accepted as divinely right, it has become authority. Reverence for authority is the social bond, and the social type is, therefore, the Authoritative.

(6) Society of the sixth type arises in populations that, like the Italian cities at their worst estate, have suffered disintegration of a preëxisting social order. Unscrupulous adventurers come forward and create relations of personal allegiance by means of bribery, patronage, and preferment. Intrigue and conspiracy are the social bonds. The social type is the Conspiratorial.

(7) Society of the seventh type is deliberately created by agreement. The utility of association has been perceived, and a compact of coöperation is entered into for the promotion of the general welfare. Such was the Achæan League. Such was the League of the Iroquois. Such was the confederation of American commonwealths in 1778. The social bond is a covenant or contract. The social type is the Contractual.

(8) Society of the eighth type exists where a population collectively responds to certain great ideals, that, by united efforts, it strives to realize. Comprehension of mind by mind, confidence, fidelity, and an altruistic spirit of social service, are the social bonds. The social type is the Idealistic.

Of these varieties of society the higher, compound communities or commonwealths, may, and usually do, include examples of the lower types, among their component groups.

All of these eight types, and the instinctive type exhibited by animal bands, have been observed from the earliest times and have suggested to social philosophers as many different theories of the nature of society. Thus in the totemistic lore of savagery we find endless suggestions of an instinct theory. In the mythologies of tribally organized barbarians we find sympathy, or natural-brother-

hood, theories, which later on are borrowed, adapted, and generalized by the great humanitarian religions, like Buddhism and Christianity. Suggested by societies of congenial spirits we have the consciousness-of-kind theories, voiced in the proverb that "birds of a feather flock together," in the saying of Empedocles that "like desires like," in the word of Ecclesiasticus that "all flesh consorteth according to kind, and a man will cleave to his like." From appropotional societies have come our natural-justice theories. From despotic societies have come our political-sovereignty theories that "might makes right," in the sense of creating law and order. From authoritative societies have come theories of the divine right of kings; from conspirital societies have come Machiavellian theories of the inevitableness of intrigue and conspiracy; and from societies long used to deliberative assemblies, to charters of liberty, and bills of rights, have come the social covenant or contract theories of Hobbes, Locke, and Rousseau. Finally, from societies that have attained the heights of civilization have come the Utopian theories, from Plato until now.

Whatever the kind or type of the society, there are found in it four great classes or groupings of facts.

Every society presupposes a certain number of concrete living individuals. The basis of every society, therefore, is a population. Every Social Population offers for observation phenomena of aggregation, or distribution of density; phenomena of composition, by age, sex, and race; and phenomena of amalgamation or unity.

The social life, however, as we have seen, is a phenomenon of mind, and the varied modes that the common activity and interplay of minds assume, present the second great class of social facts. These facts of the Social Mind, as we may call them, include the phenomena of stimulation and response in their generic forms; phenomena of resemblances and differences, that is to say, of types; phenomena of the consciousness of kind, and phenomena of concerted volition.

The common mental activity, taking habitual forms, creates permanent social relationships, that is to say, a more or less complex Social Organization. In this we meet the third great class of social facts. Two general forms may be observed. In one form, individuals dwell together in groups that, by coalescence and federation, compose the great compound societies. These groups collectively may be called the social composition. In the other form, individuals, with more or less disregard of residence, combine in associations to achieve specific ends. Such associations collectively represent the social division of labor, and therefore may be called the social constitution. In its entirety and in its subdivisions the

social organization is of one or another type, according as it is on the whole coercive, or on the whole liberal, in character.

The fourth class of social facts pertains to the great end, to the attainment of which the social organization is a means. That end is the Social Welfare. The social welfare is seen in its most general form in certain public utilities, including security, justice and liberty, economic opportunity, and opportunity for culture. It is seen finally in the type of personality that the social life creates, and which must be studied as vitality, mentality, morality, and sociality.

Not every society individually considered survives long enough to pass through all the possible stages of social evolution, but society in the aggregate, and in historic continuity, displays to us four distinguishable stages of evolutionary advance. There is, first, the stage of Zoögenic Association, in which the mutual aid and protection practiced by animal bands plays an enormously important part in the differentiation of species and in the survival of those best endowed with intelligence and sympathy. There is, next, the stage of Anthropogenic Association, in which, through unnumbered ages, the creature that was destined to become man was acquiring the distinctly human attributes of language and reason. There is, later on, the stage of Ethnogenic Association, wherein is evolved that complex tribal organization characteristic of savage and barbarian life. Finally, there is the stage of Civic or Demogenic Association, in which great peoples outgrow tribal organization, and create a political organization based on common interests, irrespective of blood-relationships.

These categories of social fact have established certain natural subdivisions in social science. Corresponding to the historical order, we have, first, studies in animal sociology; second, studies of primitive human culture; third, the great sciences of ethnography and ethnology, investigating tribally organized mankind; and, fourth, history, the narrative and descriptive account of the evolution of civil society. Corresponding to the four great divisions of phenomena in contemporaneous society, we have, first, demography, or the study of social populations; second, social psychology, and the culture-studies of comparative philology, comparative art, comparative religion, and the history of science, all of which are investigations of the social mind; third, the political sciences, devoted to a study of social organization; and, fourth, such sciences of the social welfare as political economy and ethics, the scientific study of education, studies of pauperism, and criminology.

Such being our conceptions of the nature of society, and of the proper analysis and classification of social facts, let us pass on to

examine our concepts of the great processes of social evolution, and of the causes in operation.

We accept the evolutionist point of view, and regard all the transformations that occur within any social group as a phase of that ceaseless equilibration of energy taking place throughout the universe. Every finite aggregate of matter is in contact or communication with other finite aggregates, no two of which are equally charged with energy. From the aggregate more highly charged, energy is given off to aggregates that are undercharged, and in this process the strong absorbs, or disintegrates, or transforms, the weak. Every social group, animal or human, since time began, has been in ceaseless struggle with its material environment and with other social groups. Whatever has happened to it or within it is most intelligibly accounted for if we view the process as one of equilibration of energies, between the group and its environment, or between group and group, or between unequal and conflicting elements within the group itself.

The modes that this equilibration assumes are many.

There is, first, the external equilibration of the society with its surroundings. This gives rise to the processes of migration, in which populations move from place to place in search of new food-supplies. Social groups are thus brought into conflict with one another, and the activities of militarism are engendered.

There is, next, a process of combined external and internal equilibration. Migration is its chief manifestation, but the migration is not now one of entire populations organized for war and conquest. It is one of individuals or families, moving from land to land in search of economic opportunity or of religious or political liberty, and its consequence is that exceeding heterogeneity of the demotic composition which is seen, for example, in the population of the United States.

There are, thirdly, the processes of internal equilibration. First among these is the differentiation of the mind of the population, consequent upon some degree of unlikeness and inequality in the responses of differing individuals to the common stimuli to which all are subjected. This is followed by the segregation of resembling products into types and classes. Secondly, there is an evolution of the consciousness of kind, with increasing attention to means of communication and association. Thirdly, there is a struggle between strong individuals and weak, between leaders and followers, between strong and weak classes. This equilibration may take one of three possible forms: (1) the subjugation and perhaps the enslavement of the weak by the strong; (2) economic exploitation; (3) the uplifting of the weak by the strong through education, justice, and economic aid. The moral advance of society is a progress from equilibration through subjugation and

exploitation to equilibration through uplifting, and it depends upon the broadening and deepening of the consciousness of kind.

A fourth phase of internal equilibration appears in the struggle among differing groups of the like-minded in the community. Some elements of the population are sympathetically emotional, or are alike in beliefs or dogmas. Others are alike intellectually, rationally: they attain agreement through deliberation. In every community the reasoning and the unreasoning elements are in perpetual conflict.

To the extent that the community is controlled by its deliberative element, it exhibits a policy — a more or less consistent attempt consciously made to control its destiny. In the history of human society there have been three great groups of policies, namely: (1) policies of unification — attempts to make all members of the community alike in type, in belief, and in conduct; (2) policies of liberty — attempts to give wide scope to individual initiative; (3) policies of equality — attempts to prevent the disintegration of society through an excess of individual liberty. The struggle of conflicting interests in the community, which these three modes of policy represent, is yet another form of internal equilibration.

To the extent that a policy of equality is adopted, the community is democratic. Political equality, equality before the law, and some approach toward equality of economic opportunity, are the essential elements of democracy. No sooner is democracy evolved than we see a struggle between the forces that make for absolutist, and those that make for liberal, democracy. Either the majority is permitted to rule at will, or it is compelled to leave inviolate certain rights of the minority and of individuals.

The outcome of all equilibration, external and internal, is a certain relation of the individual to the social organization. In low types of society, the individual literally belongs to the various social groups in which his lot is cast. He belongs to them for life. To leave them is to become an outcast. He may not leave his clan, his guild, his caste, his church, or his state. In superior types of society we discover a high degree of individual mobility combined with a marvelous power to concentrate enormous numbers of individuals, in moments of emergency, upon any work needing to be done. The individual may go freely from state to state, from parish to parish, in search of his best economic opportunity. He may sever connection with his church to join another, or none at all. He may be a director to-day in a dozen corporations, and to-morrow in a dozen different ones. The goal of social evolution is a complex, flexible, liberal organization, permitting the utmost liberty and mobility to the individual, without impairing the efficiency of organization as a whole.

On the methods of sociology, remark at this time must necessarily be brief.

Dealing as we do with highly concrete materials, we place our main reliance upon systematic induction. The experimental method of induction, however, is of little avail in the scientific study of society. Although social experimenting is at all times going on, it is difficult to isolate causes or to control conditions with scientific thoroughness. Observation, therefore, and critically established records of observations made in bygone days, must be our main dependence, so far as the accumulation of data is concerned.

Yet in a field so vast, observation itself would be a fruitless toil if it were not directed by scientific rules. Canons of guidance we find in the so-called comparative and historical methods. Selecting any social fact, or correlation of facts, observed in any given society, we systematically search for a corresponding fact or correlation in all contemporaneous societies, animal and human, ethnic and civil. This search has one clearly defined object, namely, to determine whether the observed fact is a universal, and therefore an essential, an elementary phenomenon of society, and, if it is not universal, to ascertain just how wide its distribution is. By such research we discover those resemblances and differences in social phenomena that are the bases of scientific classification.

Having in this manner arrived at a scheme of classification, we use it in subsequent observation precisely as the chemist or the botanist uses the classifications that have been established in his science. We systematically look for the facts and the correlations that the classification leads us to anticipate.

In like manner, following the historical method, we search for a given social fact at each stage in the historical evolution of a given society, and thereby determine what social phenomena are continuous.

A complete scientific theory of natural causation is established only when our knowledge becomes quantitatively precise. Often the law that we seek to formulate eludes us until the correlations of phenomena have been determined with mathematical exactness. Sociology has unjustly been reproached for neglecting that attention to precision which is the boast of other sciences. The indictment of vagueness may be a true bill against individual sociologists. It is demonstrably not a true bill against sociology. It is to the scientific students of sociology that the world owes the discovery and development of an inestimably valuable form of the comparative and historical methods, namely, the statistical method. Every inductive science to-day is adopting this method. Physics, chemistry, astronomy, and geology, would be helpless without it. The biologists have acknowledged their dependence

upon it by the establishment of a statistical journal, *Biometrika*. It is not too much to claim that the possibilities of this now indispensable method of all the sciences were first demonstrated in the epoch-making social studies of Jacques Quetelet, and that its employment in sociology has been out of all proportion to its employment elsewhere. As developed in recent years by the Dane, Westergaard; by Germans like Steinhauser, Lexis, and Meyer; by Italians, like Bodio; by Frenchmen, like Lavasseur and Dumont; by Englishmen, like Charles Booth, E. B. Tylor, Galton, Bowley, and Karl Pearson; by Americans, like Weber, Norton, Mayo-Smith, Cattell, Thorndike, and Boas, it has become, and will continue to be, the chiefly important method of sociology; and assuredly, in the course of time, it will bring our knowledge of society up to standards of thoroughness and precision comparable to the results attained by any natural science.

THE DEVELOPMENT OF SOCIOLOGY

BY GEORGE EDGAR VINCENT

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THE turbid stream of social theory which flowed out of the past into the nineteenth century carried a confused mass of knowledge and speculation about every aspect of collective life. The penetrating idealism of Plato, the realistic insight of Aristotle, the semi-humorous sanity of More, the shrewd analysis of Machiavelli, the upheaving dialectic of Hobbes, the wide vision of Vico, the contagious paradoxes of Rousseau, the naturalistic explanations of Montesquieu, the scientific generalizations of Adam Smith, the optimistic dreams of Condorcet, the mystical interpretations of Lessing and Bunsen — all these conflicting, overlapping, or partial theories formed a bewildering tradition which it has been the task of nineteenth-century philosophers and scientists to sift, enlarge, and systematize. The one common idea appearing in many forms throughout this mass of speculation was that of law as finding expression in the affairs of men. This recognition of inevitable sequences and coexistences, to whatever cause attributed, was the fundamental principle which the social philosophy of the nineteenth century received from the past.

The elaboration of this vast tradition has involved both analysis and synthesis. The mass had to be classified, differentiated. At the outset economic science alone had begun to assume a distinctive form. With the increase of observation and reflection still other facts were set off into specialized fields of research. Thus one outstanding achievement of the century has been the division of a confused tradition into a number of fairly well-defined social sciences. But there has also been a persistent effort to resist this dissolution into parts, to restore to their larger relationships the abstracted elements; *i. e.*, to preserve the unity of social theory as a whole. Such is the secular antithesis between analysis and synthesis, between science and philosophy.

The term "sociology" is used in at least four different senses, two of which are directly related to the present discussion: (1) as a vague general term to include the entire field of social fact and theory; (2) as a social philosophy which aims at a unifying conception of society as a whole; (3) "pure" or "general" sociology seeks recognition as a science, classifying facts and discovering

the laws which underlie association as such; (4) "practical" sociology describes the scientific treatment of the problems of social organization and welfare.¹ To the development of sociology as philosophy and as science this survey must be confined.

As to method of treatment, several ways lie open. Each has certain advantages. The division of sociologies into (1) classificational,² (2) biological, (3) organic, and (4) psychological, affords seemingly definite criteria and a natural developmental series. Traditional philosophic dualism displays itself also in social theories, which may be classified as objective or naturalistic on the one hand, and subjective or idealistic on the other. Again, the division into individualistic and collectivistic has a certain significance. So also the chronological treatment of men and theories is of unquestioned value. In the present case, however, no one of these methods seems sufficiently flexible or comprehensive. While, therefore, reference will be made, as occasion may demand, to one or another of these classifications, this survey will select certain typical problems of social science and philosophy, and will attempt to show (1) what kind of problems have engaged the attention of sociologists, and (2) what development of theory has been associated with each. The problems which have been selected for this purpose are the following:

- (1) The problem of conceiving society as a whole.
- (2) The problem of race-conflict and group-struggle.
- (3) The problem of the psychical nature of the group — the social mind.
- (4) The problem of the individual and society.
- (5) The problem of the influence of natural environment on the social group.
- (6) The problem of social progress.
- (7) The problem of the province of sociology as a science.

The conception of society as an organic whole enduring through secular time, extending over wide areas, and unified by natural forces from without and by conscious consensus from within, was fundamental with Comte. His "law of the three stages" swept into its ken an unbroken continuity of generations which were later idealized into an object of worship — Humanity. True, this idea had been implicit in all the philosophies of history, and the organic simile is traceable to remote antiquity, but Comte was the first — with the possible exception of Vico — to present in a realistic and vivid way this view of the unity of mankind. The "hierarchy of the sciences" was only another means of empha-

¹ This should be not an isolated art, but organically related to "general sociology."

² Barth, *Die Philosophie der Geschichte als Sociologie*, p. 58.

sizing this idea. Step by step the mind is led up from physical and chemical combinations to organic and thence to social unities. This conception, familiar as it seems, was in Comte's time by no means obvious, and to-day it is far from generally accepted. Persons and small groups, not vast social wholes, are the striking surface facts which hold the attention of the average observer.

Biological sociology has elaborated the conception of social unity and centralization. Comte merely outlined the idea of the social organism. Spencer carried the analogy to a high degree of definite detail, insisting especially upon parallels of structure. Lilienfeld laid all the stress upon the nervous system, as does Novicow in his theory of the social élite.¹ So, too, Fouillée classifies social organisms according to the degree of centralization they have attained; *i. e.*, according to their nervous organization.² Schäffle emphasized functional analogies rather than structural correspondences, and made much of the integration of social activities in a complex common life.³ Worms has carried the biological analogy almost to the point of asserting an identity.⁴ Beneath all these variations in emphasis, underlying a mass of commonplace, fanciful, and even grotesque parallelisms, one discovers always the fundamental idea of social unity, structural and functional. If the biological sociologists have not always seen society steadily, they have at least tried to see it whole.

The so-called classificationists who, following Comte's example, have sought to solve the problems of sociology by classifying social phenomena into hierarchical orders, have also contributed to the idea of social unity. Thus Littré discovers four social systems which appear in this order: economic, political, artistic, and scientific.⁵ De Greef increases the number to seven;⁶ La Combe, with his theory of urgency in human motives, arranges these in an order practically the same as De Greef's.⁷ Others still have made classifications, although not of the hierarchical kind. A. Wagner classifies human motives under five heads,⁸ while Small discovers six typical demands for satisfaction — demands which work themselves out into social activities and institutions.⁹ It is to be noted that all these classifications, whether of phenomena, systems, or motives, assume a society which is unified by the dependence and interrelations of the analyzed elements.

¹ Novicow, *Conscience et volonté sociales* (Paris, 1897), pp. 32 ff.

² Fouillée, *La science sociale contemporaine* (Paris, 1878), pp. 161-168.

³ Schäffle, *Bau und Leben des sozialen Körpers*, 2d ed. (Tübingen, 1896).

⁴ Worms, *Organisme et société* (Paris, 1896), pp. 42 ff.

⁵ Littré, *La science au point de vue philosophique* (Paris, 1873), pp. 367, 368.

⁶ De Greef, *Introduction à la sociologie*, vol. I, pp. 46-65.

⁷ La Combe, *De l'histoire considérée comme science*, pp. 69 ff.

⁸ Wagner, *Grundlegung der politischen Oekonomie*, 3d ed. pp. ff.

⁹ Small and Vincent, *An Introduction to the Study of Society*, pp. 175 ff.

With the shifting of emphasis from the biological to the psychological analogy this theory of the social whole has been inevitably modified. Division of labor and interdependence have yielded more and more to the idea of a unity in habit, feeling, and thought. Tarde, for example, conceives a constant tendency toward larger social groups by means of ever-spreading waves of imitation.¹ This conception of an increasing unification of mankind is traceable in part to the evolutionary philosophy of the second half of the century, in part to the rapid extension of commerce and the closer international relations which this has involved, and in some degree to that idealism which Condorcet suggested, which Comte exalted, and which finds expression in the dream of "a parliament of nations, the federation of the world."

Valuable as this philosophical idea of organic social unity and increasing centralization undoubtedly is, it has distinct limitations. The biological analogy is clearly recognized as having reached and often transgressed the limits of its usefulness. It is the descriptive philosophy of an observer from without rather than the science of the student at close quarters with the facts of association. Mallock has asserted that the Spencerian sociology, when tested by the practical demands of the times, utterly breaks down. It has no solution for the problems of the day because Spencer deals with society as a whole, while all so-called social problems arise from maladjustments and conflicts between the parts of society — classes, parties, sects, and other groups.² It is further true that the concept of society as a whole is a vague notion at best, and on ultimate analysis is likely to resolve itself into the idea of a national group defined by geographical boundaries and controlled by a single political system.

It was inevitable in the circumstances that to certain students society should present a picture, not of harmony and unity, but of conflict and struggle.³ Thus Gumpłowicz sees in the history of mankind a never-ending conflict of hordes, tribes, races, classes, and other groups. These struggles may change their forms, but never their essential character, the exploitation of the weak by the strong.⁴ To Ratzenhofer society is an area of interests which first form individuals, then groups, then wider groups, and struggle perpetually for the realization of the dominant interest. Each interest forms a struggle-group in which leadership and authority

¹ Tarde, *Les lois de l'imitation* (Paris, 1890), pp. 42 ff.

² Mallock, *Aristocracy and Evolution* (London, 1896), pp. 8-16.

³ Ross points out that Spencer and Tarde live in centralized and homogeneous states, while the leaders of the "conflict" school, Gumpłowicz, Ratzenhofer, Loria, *et al.*, have been reared among peoples characterized by racial and national antagonisms. *Recent Tendencies in Sociology, Quarterly Journal of Economics*, August, 1902.

⁴ Gumpłowicz, *La lutte des races* (tr. Baye), pp. 159 ff. and 340.

are developed under the reacting influence of the led.¹ Novicow elaborates the idea of conflict which he conceives as gradually passing from the crude form of violence and robbery, through exploitation, monopoly, and privilege, to the higher form of mental conflict — discussion.² Sighele in his study of sects and parties also makes much of the rôle of antagonism and struggle.³ Marx utilizes the same general idea in his famous doctrine of class-conflict.⁴ Loria, too, discovers everywhere the dominance of class interests with no concern for the common welfare.⁵ Vaccaro, on the other hand, while recognizing the prevalence of upper-class control, describes the gradual mitigation of this struggle through concession until a larger social unity is achieved.⁶ Here he approaches Spencer, who naturally makes much of group-conflict in the early stages of social evolution, but almost wholly overlooks, in modern life, the persistence under many disguises of these "struggle-groups."⁷ The fundamental difference between the unity school and the conflict school is as to the degree to which unity has been attained. Of those who see chiefly group-struggle in society, only one, Gumpłowicz, refuses to admit any progress toward an ultimate harmony. The rest, while emphasizing the struggle phase, leave room for a more or less remote possibility that this conflict may be in some measure mitigated, if not abandoned. As a means of interpreting contemporary or historical social facts the conflict theory — with the group-psychology which this involves — has obviously a practical value. The organic unity of a modern city or nation is an elusive idea in contrast with the contests of classes, sects, races, and parties, which lie upon the surface. Yet it would be a serious error wholly to lose sight of the larger unity which actually underlies these apparently endless group-struggles.

Comte based his idea of social unity not only on the organic or naturalistic analogy,⁸ but on consensus or psychical community. Of late it is the latter concept which has been elaborated. The idea of a social or group-spirit is not new: it is a philosophical notion of long standing. The *Zeitgeist*, the popular will, public opinion, were familiar phrases long before the days of social psychology. Spencer, Schäffle, and Lilienfeld recognized the psychical

¹ Ratzenhofer, *Die sociologische Erkenntniss* (Leipzig, 1898), pp. 252 ff.; *Wesen und Zweck der Politik* (Leipzig, 1893), pp. 657 ff.

² Novicow, *Les luttes entre sociétés humaines et leurs phases successives* (Paris, 1893).

³ Sighele, *La psychologie des sectes* (Paris, 1898).

⁴ Marx, *Zur Kritik der politischen Oekonomie*, Introduction, p. v.

⁵ Loria, *Les bases économiques de la constitution sociale*, 2d ed. (Paris, 1893), pp. 17 ff.

⁶ Vaccaro, *Les bases sociologiques du droit et de l'état* (Paris, 1898), pp. 79 ff.

⁷ Cf. Simmel, *The Persistence of Social Groups*, *American Journal of Sociology*, March, May, and July, 1898.

⁸ Comte, *Cours de philosophie*, vol. iv, p. 460.

nature of society, but their attention was too much fixed upon the rounding out of their analogies.¹ They assumed what others have sought to analyze. The concept of the social mind is playing a more and more important part. It was a somewhat mystical idea with the founders of *Völkerpsychologie*, Lazarus and Steinthal, but it has become increasingly concrete and definite, until it may perhaps be regarded as the most fruitful field of contemporary sociological research. The need of such a theory was made clear by the failure of the biological school to supply an adequate explanation of social unity. Mere division of labor and an interdependence almost wholly economic left too much to be desired.

Beginning with a general statement like this from Lazarus, "A people is a collection of men who regard themselves a people. It is the spiritual achievement of those who compose it, who ceaselessly create it,"² it is instructive to trace the gradual closing-in upon the problem. Lewes made several illuminating observations. Psychologists like Wundt, James, and Baldwin were irresistibly drawn over into the new field. The phenomena of group opinion, feeling, and conduct began to be studied in earnest. Tarde announced his process of imitation, opposition, and invention; Giddings contributed "consciousness of kind" and outlined the "integration of the social mind;" Simmel based group-unity on common symbols, obedience, loyalty, and consciousness of group-honor;³ Hauriou suggested the analysis into (1) grouping and the feeling of grouping, (2) individuality and the feeling of individuality, and (3) conciliation;⁴ Baldwin offered his "dialectic" of personal and social growth; and Ross published a keenly analytic study of social control. Moreover, Boris-Sidis, Le Bon, Ross, Tarde, and Sighele made important contributions to the morbid psychology of the group, as displayed in mental epidemics and mob violence.

However various and conflicting these different theories may seem at first glance, they are actually in most cases complementary, and together they afford an admirable working theory. The rôle of suggestion is recognized as fundamentally important; the subordination of reflection to feeling, the persistence of custom and habit, the predominance of unconscious forces, the function of leadership, the control by group ideals, the modification of these ideals in adjustment to the changing conditions which the group confronts, the devices by which the group cozens its members into conformity — all these aspects have been combined into a psycho-

¹ It should be noted, nevertheless, that Schäffle made important contributions to social psychology in his studies of leadership and authority, and the reaction upon them of the public or group. *Loc. cit.*, vol. 1, pp. 205-231.

² Lazarus, *Das Leben der Seelen*, vol. 1, p. 372.

³ Simmel, *loc. cit.*, March, 1898, p. 66.

⁴ Hauriou, *La science sociale traditionnelle* (Paris, 1896), pp. 7 ff.

logy of group organization and activity which demands nothing less than a renovation of the assumptions of all the social sciences. The "consent of the governed" theory, the theory of value, the ideas of property, sovereignty, inalienable rights, free-will, must all reckon with social psychology. Indeed, there are those who go so far as to say that sociology as a science will turn out to be nothing else than this psychology of association.

This psychical nature of the group suggests another fundamental problem — that of the individual and society. Of Comte it has been said that he regarded the individual as an abstraction and society as the only reality.¹ On the other hand, it might be fairly asserted that the thorough-going individualists of the English school saw only persons, and thought of society itself as the abstraction. With Comte the family, not the individual, was the unit of the social organism. Spencer, in spite of occasional aberrations in favor of the family, represented the individual as corresponding to the cell in the animal body. Spenceer's political views made him adhere to a conventional individualism not always congruous with the biological analogy. His influence told, therefore, in favor of the older idea of the individual as a reflecting, calculating unit, consciously coöperating in society for his own ends, and nicely weighing his own interests against those of his fellows. All the political philosophy of Rousseau, mediated through the French Revolution, chimed with this theory of the individual. Oddly enough, the "great-man" doctrine of Carlyle aroused Spencer to the defense of his biological conception of social evolution. In demonstrating the continuity of this process and vindicating the uniformity of causation, Spencer was obliged to explain the "great man" as a product of his age and social group — a theory which did not always jump with the implications of his political creed. Before this discussion was dropped, William James,² Fiske,³ and Grant Allen⁴ had been drawn into the lists. The latter in his *Psychology* dealt with the "social self" in a suggestive and enlightening way.⁵ This was the first of a series of studies by various scholars which have radically modified the concepts of the individual and of personality. The same problem was also partially involved in the attempt of Mackenzie to abstract the organic idea from the biological sociology.⁶ One of the elements of this organic idea is "an intrinsic relation between the part and the whole," *i. e.*, the person and society. The essential idea in

¹ Barth, *loc. cit.*, p. 55.

² James, *Great Men, Great Thoughts and the Environment*, *Atlantic Monthly*, October, 1880.

³ Fiske, *Sociology and Hero Worship*, *ibid.*, January, 1881.

⁴ Allen, *The Genesis of Genius*, *ibid.*, March, 1881.

⁵ James, *Psychology* (New York, 1890), vol. 1, pp. 291-295.

⁶ Mackenzie, *Introduction to Social Philosophy* (New York, 1890), pp. 127-182.

"intrinsic" is that each gets its meaning from the other. The individual can be understood only in relation to his group, and the latter has no meaning apart from the persons who compose it. In this view not only society but the individual is an abstraction from a complex unity which includes both.¹ This general thesis has been developed by several social psychologists, notably Baldwin and Cooley. The former explains the growth of personality as a process of give-and-take with the social group. This makes for a uniformity which is prevented from becoming identity because of the inventions or particularizations of individuals. Society grows by the generalizing or imitating of these particularizations.² The process as a whole closely corresponds with Tarde's, but the latter's psychological analysis of the social person is far less keen and detailed. This view of the individual as at once a social product and a social factor is a rational and scientific mean between the old individualism which made the person almost independent of his group, and the socialistic fatalism which represents the individual as merely the outcome of social forces over which he has no control.³

The danger that the new social psychology might over-emphasize uniforming tendencies and neglect the forces which individuate the members of a group has not been realized. Of late the tendency has been rather to investigate the facts and causes of individual differences. The influence of sex,⁴ race, disposition, and occupation has been studied. Patten explains English evolution in terms of four types dominant at different periods — the clingers, sensualists, stalwarts, and mugwumps.⁵ Giddings classifies character into four categories — the forceful, convivial, austere, and rationally conscientious.⁶ Ratzenhofer regards only congenital differences which he assort into nine subdivisions of three great classes — the normal, abnormal, and defective.⁷ The differentiating influence of social institutions and occupations has been analyzed in a suggestive way by many investigators and students. While most of these essays are merely tentative, they are full of promise. The individual as to-day conceived by sociologists is a far cry from the abstraction who with inalienable rights, a preternatural rationality, and an unhampered will stalked out of the "social contract" into the nineteenth century.

¹ Cooley, *Human Nature and the Social Order* (New York, 1902), chap. i.

² Baldwin, *Social and Ethical Interpretations in Mental Development* (New York, 1897), pp. 7-9, 455-465.

³ A clear statement as to the transition from the old to the new theory of the individual may be found in Professor Ormond's article *The Social Individual*, *Psychological Review*, January, 1901.

⁴ Thomas, *On a Difference in the Metabolism of the Sexes*, *American Journal of Sociology*, July, 1897; March, 1898.

⁵ Patten, *The Development of English Thought* (New York, 1899), pp. 23-32.

⁶ Giddings, *Inductive Sociology* (New York, 1901), pp. 82 ff.

⁷ Ratzenhofer, *Die sociologische Erkenntniss*, pp. 260-271.

The influence of physical environment on social organization and activity has long been a moot question. The contrast between materialism and idealism is as old as the *Politics* and the *Republic*. Is man the creature of contour, soil, and climate; or is he the master of his fate? The Physiocrats and Montesquieu gave materialism an impetus which brought it well into the century. Comte's interest in the subjective phase of social evolution diverted his attention largely from the objective. The rapid development of natural science, toward the middle of the century, again brought to the fore the naturalistic interpretation of social and individual differences. Buckle, Guyot, and Draper pushed this view to an extreme which seemed to make the continuity of natural forces from beginning to end not only complete but relatively direct. Buckle, for example, represented the "aspect of nature" as stamping its effect upon a people in an immediate and easily perceptible way.¹ The careful researches and inductions of geographers like Ratzel and Ripley, and the contributions of the Le Play school in France, have led a reaction against the theories of the direct influence of nature on society. Le Play and his followers insist that environmental influence is mediated in an indirect and complex way through a long hierarchy of conditions, activities, and institutions, beginning with place and ending with the rank of the society in the scale of civilization. Vignes states the main thesis of the school to be that nature determines work and reward, which in turn mold the society and differentiate its population.² Demolins in recent volumes has illustrated the Le Play theories concretely as applied to the creation of different local types in France, and as explaining the leading racial groups of the world.³ A similar tendency is observable in the United States, where scientists like Shaler and Brigham, historians like Hart and Turner, geographers like Ripley and Miss Semple, and sociologists like Giddings, have been at work upon the problem of environmental influence. The general tendency away from the idea of immediate effects toward the theories of influence exerted indirectly through social institutions is attributable largely to the increasingly important part which sociology is playing, not only as a science, but as a social philosophy which affects all the social sciences.

The idea of social progress was fundamental with all the philosophers of history. Whether spiral as with Vico, or rectilinear as with Condorcet, the path of human advancement was not to

¹ Buckle, *History of Civilization in England*, 2d ed. (New York, 1863), vol. I, pp. 85 ff.

² Vignes, *La science sociale, d'après les principes de Le Play* (Paris, 1897), pp. 57-63.

³ Demolins, *Les Français d'aujourd'hui* (Paris, 1898); *Comment la route crée le type social* (Paris, 1901).

be missed. De Greef has traced the historical origin and development of this idea which was a part of the heritage of the nineteenth century from the past.¹ Rousseau's "back to nature" and the golden age of primitive innocence left this optimistic dream intact. Comte by his division of sociology into static and dynamic provided a new term for progress which he regarded as conditioned by the intellectual movement generalized in the law of the three stages. With the prevalence of positivism all differences of opinion — "intellectual anarchy" — would perforce disappear and complete harmony would reign in a final static order. The idea of evolution as illustrated by social changes is the great central concept of nineteenth-century sociology. It is everywhere dominant, and every problem has been stated or restated in terms of the developmental doctrine. But evolution and progress are by no means synonyms. Spencer naturally discovered in his law of evolution certain criteria which were sometimes assumed to be those of advance. Heterogeneity, coherence, definiteness, were often set up as tests — however abstract and difficult to apply — of social advancement. But Spencer really relied upon his two social types of militarism and industrialism with their characteristic status and contract. Here was an infallible criterion. Whatever tended toward military autocracy portended retrogression, while movement toward industrial liberty and free contract was to be reckoned progressive. Ward represents the Comtean theory that intellectual control is the guiding dynamic agency. *Telesis* — purposeful social action — is contrasted with *genesis* — unconscious, natural social growth — and likened to the calculated course of an ocean liner as compared with the drifting of an iceberg.² With Ward the diffusion of accurate knowledge is an automatic means of progress. Giddings, admitting that the problem is philosophic rather than scientific, sees three progressive stages in social evolution: (1) political centralization; (2) criticism and freedom; (3) industrial and ethical development.³ By these he would test the degree of advancement and the trend of a given people or society.

In an address delivered in 1892, Mr. A. J. Balfour examined the popular belief in progress, taking up successively the arguments from biology, the increase of knowledge, and the elevation of ethics. His conclusion was that there are no rational or strictly scientific grounds for predicting progress, and that it is futile to raise the question.⁴ While sociologists as a class would hardly take this

¹ De Greef, *Le transformisme social* (Paris, 1893).

² Ward, *Pure Sociology* (New York, 1903), pp. 463, 465.

³ Giddings, *Principles of Sociology*, pp. 299 ff.

⁴ Balfour, *A Fragment on Progress, Essays and Addresses* (Edinburgh, 1893).

view — while, as a matter of fact, they expect their researches to have social utility — their present interest may be said to turn not so much to large philosophic generalizations concerning vast secular movements as to the more definite scientific study of concrete social phenomena. They are concerned rather with the laws of change than with the formulation of world-theories. This is only a manifestation of a general tendency to be noted presently.

It remains to consider the scope and the phenomena peculiar to sociology as a science. Giddings asserts that it is "the general or fundamental science of society which occupies itself with the elements and first principles of social phenomena," leaving detailed investigation to special social sciences.¹ In this view sociology bears the same relation to these social sciences that biology sustains to zoölogy, botany, anatomy, and physiology. Small, on the other hand, sees in sociology "a synthesis of all the particular social sciences" and regards sociologists as engaged in the task of "codifying the results of the special social sciences and in organizing these groups of scientific data into a coherent social philosophy."² While these views at first seem radically different, they are not, after all, irreconcilable. Sociology is both a science and a philosophy. Moreover, sociology must discover the laws of association as such; but these laws are discoverable only in the concrete facts analyzed and organized by the special social sciences. If there be a distinction in these ideas, it is that the fundamental view fixes attention on principles, while the "synthetic" theory looks also over the border toward policy and practice.

Again, the phenomena peculiar to sociology are variously conceived. De Roberty's "*sociabilité*," Gumpłowicz's "conflict," De Greef's "contract," Spencer's "coöperation," Tarde's "imitation," Durkheim's "coercion," Simmel's "subordination," Giddings's "consciousness of kind," seem at first glance to form a chaos of ideas. But on examination these turn out to be simply various aspects of the structure and activity of the social group as such. They are different characteristics common to all types of social organization. The fact that these characteristics are almost wholly psychical is significant of the trend of scientific sociology and goes far to identify it with social psychology.³

Sociologists have by no means reached a consensus comparable, for example, with that of the economists, but when variations in terminology have been eliminated, a considerable and ever-widening area of agreement emerges from the apparent confusion.

¹ Giddings, article on *Sociology*, Johnson's *Encyclopedia*, ed. 1895.

² Small, *loc. cit.*, pp. 54 ff.

³ Cf. Caldwell, *Philosophy and the Newer Sociology*, *Contemporary Review*, September, 1898.

Thus as to society in general all agree that it is (1) a product of physical and psychical forces, (2) working in an evolutionary process, in which (3) at first predominantly instinctive activities later yield in some measure to (4) reflective and purposeful policies. This view regards society as (5) organic in the general, not specific, sense of the term. As to the social group as a type of common mental life it is further agreed (1) that individuals in their very personal growth unconsciously incorporate the standard of their group, by which they are, furthermore, (2) coerced into conscious conformity. The uniforming influence of imitation and group ascendancy is counteracted by (3) leaders or authorities who initiate new ideas and activities to be selected and appropriated by all. Between such leaders with their followers (4) a struggle for ascendancy ensues. This results ultimately in (5) a relatively permanent body of customs and institutions imbedded in feeling; *i. e.*, group tradition or character. When the members of the group are aware of common ideals and purposes (6) a social consciousness is developed.

If the tests of a science be formulation of laws and power to predict, sociology is not far advanced on the road to a scientific status. Such laws as have been put into definite form are too often either somewhat axiomatic or platitudinous, or are philosophical rather than strictly scientific. Nevertheless, especially in the field of social psychology, more successful results have been achieved. Principles closely approaching in insight and accuracy the unquestioned laws of economics have been enunciated, and promise of progress in this direction is not wanting.¹ As to prediction, which is conditioned on the formulation of principles, naturally the sociologist is even more cautious than the economist about foretelling a result in a given concrete case. Certainly the point has not been reached when the sociologist is justified in dogmatizing on the basis of his scientific principles.

In this rapid survey of the growth of sociology certain tendencies stand out in fairly distinct outline:

Sociology began by being a social philosophy, a philosophy of history,² and such it has been until very recently. To put social philosophy into the language of a natural science is not to make it a science. But as a philosophy it has rendered important service. It has preserved the unity of social theory — a unity constantly menaced by the specialization which has abstracted different groups of phenomena. It has afforded a point of view by which all the social sciences have been consciously or unconsciously influenced.

¹ Cf. Ross, *Recent Tendencies in Sociology*, *Quarterly Journal of Economics*, August, 1902.

² Barth, *loc. cit.*, pp. 10-13.

Of late sociology has given less heed to vague general consideration of society as a whole, and has come to closer quarters with certain phenomena of association—especially those of social psychology. The struggle-group as molded by conflict has received attention. The mental unity and processes of the group have been studied. The theory as to the relation of the individual to society has been reviewed and radically modified. Environment is thought of as exercising, not an immediate, but a complex and indirect influence on society. Vague concepts of secular progress have yielded to a more careful study of the conditions and laws of order and change. Finally, sociology is seeking to add to its service as a philosophy the contributions of a science which shall formulate valid laws as to the universal principles that underlie the phenomena of association.¹

¹ Caldwell's statement may be quoted here: "The sociology of to-day is partly a philosophical theory, partly a science, and partly a gospel about the tendencies of what is called social evolution; it is a theory of the nature and development of the organization that is called society, of the manifestations in the actions of men of the principles of association." *Loc. cit.*

SECTION A — SOCIAL STRUCTURE

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(Hall 15, September 21, 10 a. m.)

CHAIRMAN: PROFESSOR FREDERICK W. MOORE, Vanderbilt University.

SPEAKERS: FIELD MARSHAL GUSTAV RATZENHOFER, Vienna.

PROFESSOR FERDINAND TOENNIES, University of Kiel.

PROFESSOR LESTER F. WARD, U. S. National Museum.

SECRETARY: PROFESSOR JEROME DOWD, University of Wisconsin.

THE PROBLEMS OF SOCIOLOGY

BY GUSTAV RATZENHOFER

(Translated from the German by courtesy of Professor Albion W. Small, Chicago University)

[Gustav Ratzenhofer, Late Field Marshal of the Austrian Army. b. July 4, 1842, Vienna, Austria. Educated for military service, and served with distinction in the armies of the Empire, and later in the Ministry of War at Vienna. A deep student of sociological problems, and an authoritative writer on the subject. The Congress and its object appealed strongly to his gallant spirit, and although ill during the summer of 1904, he determined, against the advice of family and physicians, to keep his promise to be present. He came, accompanied by his son, and took part in all the proceedings, which he greatly enjoyed, and where he was accorded the distinction and deference due to his age and rank. On the return voyage his strength failed, and he died just before the ship arrived in port. The burial was on Oct. 14, in Vienna. — *Editor*.]

It seems to me necessary to introduce the discussion of my theme by explaining what I understand by sociology, what its tasks are, and what the methods are which seem to me appropriate to this science.

By sociology I understand the science of the *reciprocal relationships of human beings*; its task is to discover the fundamental tendencies of social evolution and the conditions of the general welfare of human beings.

In accordance with this conception, sociology should lead to promotion of the common weal on a level above that of naïve empiricism; viz., on that of conscious and purposeful action. Sociology should do for social weal what medicine, for example, tries to do for bodily welfare. A scientifically sanctioned practice should take the place of the prevailing quackery in treatment of the social body. In earlier times the various creeds and churches were zealous in trying to regulate social relationships. More recently this has been the function of political authorities. Because, however, neither of these agencies has in practice very often secured the common weal it came to pass that the elucidation of this question fell largely into

the hands of speculative theorists. Plato and Aristotle were sociologists whose dialectical system maintained influence down to the time of Hegel. Because this thought, however, acquired little influence over the reciprocal relationships of men, there was at last a turning of research toward social phenomena in order to derive theorems from experience in this field. As a matter of course, it was necessary that the total phenomena of human relationships should first of all be separated into special departments of research. Certain such special departments had already been for a long time the subject-matter of investigation. This is true of history considered as chronological exhibition of social evolution, with especial reference to the political and cultural struggle for existence among peoples. A further notable department of specialization is investigation of economic phenomena, introduced in its modern form by Adam Smith. Gradually specialization took possession of all the important phenomena of social life, such as religion, customs, law, civilization, etc.; and still further the real causes of these phenomena, such as place of abode, climate, race, the statistical elements of social phenomena, etc.; so that to-day we have a mass of material from such investigation which it is well-nigh impossible to survey.

Nevertheless, through these special investigations a science of the reciprocal relationships of human beings in general was merely made possible. At first they veiled the nature and the method of sociology. The very research which produced the building-materials of sociology assumed a hostile relationship toward that science. In order to understand this, we must observe that in the modes of thinking that have come into control since the eighteenth century, so far as social phenomena are concerned, there has been modification by a thought-movement more powerful than specialization itself. It has revolutionized everything that was ancient in science; it has subjected everything else to its method. I refer, of course, to the awakening and the exact development of the natural sciences. These have found all virtue in *specialization*, in the *singular*, in *investigation of the microcosm*, based upon mathematical certainties. Although it cannot be denied that the tremendous successes of the natural sciences are attributable to this method, yet it is not to be reconciled with our present realistic spirit that such one-sidedness, although it may be easily understood, should persist in ascribing all virtue to this method, and should forget that the whole of human progress has not been produced by it, but rather through the *integration of ideas*, through the *intellectual control of the microcosm*, through the formation of *general ideas*. How could Darwin have gone through his biological career if there had not been in his mind from the beginning the vital conception, the intuitive conviction, of the unity of origin of all organisms? Preceding all special labor

in astronomy and geology stands, in the form given to it by Kant and Laplace, the idea of creation. While the specializing science of to-day pushes the significance of the *fundamental ideas*, the *principles*, the *system*, into the background, they would surely have undermined the vital conditions of sociology, whose aim is to discover correlation on the largest scale, if it were possible to arrest the course of development of human understanding. From suspicion of the dialectic philosophy men had become accustomed to accuse all fundamental ideas of being merely invalid inductions. This was entirely unjust; for, as all psychological analysis teaches, while they may be erroneous, they are, however, always syntheses of individual experiences; that is, the product of induction. It must be further observed that every piece of minute scientific work, in so far as it is not stimulated by the purpose of mere invention for capitalistic use, must lend itself at last to a generalizing synthesis, if all research is not to remain purposeless. This appears in the case of all public arrangements of the state and of society.

One must, like myself, live in the atmosphere dominated by the traditions of learned Germany, in order to have an idea of the bitter struggle which the special sciences have waged against sociology. Nevertheless this struggle, in spite of outbreaks of hatred toward the founders of sociology, — as, for example, against Gumpłowicz, — has already turned in their favor. The book-market is swamped with bulky works which try to assume the appearance of sociological intelligence, and the designation "sociology" is applied to the most incongruous fields of thought.

Since now in all generalization induction is an inevitable condition, and every specialization must terminate with a synthesis, the problem before us seems simply to be to provide, as a basis for the synthesis that shall control social life, an induction which is not liable to error.

From time immemorial men have sought to reach theorems of universal validity. Even specializing science has not been able to avoid this demand. We have consequently a vast literature in which specialists, from their own peculiar one-sided standpoint, have sought to arrive at a synthesis covering social evolution. Starting with historical, economic, statistical, juridical, philological, biological, anthropological, geographical, or other similar standpoints, they attempt to detect the fundamental principles of social relationships. These attempts are of course futile, because sociology cannot be derived inductively from a single one of these numerous fields of knowledge. It must be derived from them all. If one of these scientific factors is omitted, or is not taken into the reckoning at its full value, the sociological calculation is on that account as vicious as if in a mathematical formula one should omit

even the most unimportant symbol. The laws of social relationship are like those of the universal mechanism, to be discovered only from a survey of all the phenomena. All absorption in a special group of phenomena brings with it the danger of running into anti-thesis with the laws which govern the whole; this, in other words, means danger of giving a false interpretation to the special. The Ptolemaic conception of the universe remains the perpetual warning of the dangers of a too narrow point of view.

It was Comte who first recognized this truth. His positivism compares the facts of reflection, of sense-perception, and of social evolution, so that the synthesis may be an induction from an adequate series of experiences. We know that Comte's work did not succeed, because, on the one hand, he did not have the comprehensive knowledge of the objective phenomena of social life, and because, on the other hand, he had not sufficiently investigated man, the unit of these reciprocal relationships. Kant's influence was, however, by no means without effect. His positive method won the conviction of investigators more and more as the method by which it is necessary to reach a scientific comprehension of the content of human relationships. This perception came into natural correlation with the products of special investigation. On the basis of the scientifically ascertained facts, of the natural laws, and of logic, search is now made for the social laws. Interpreted by the conceptions of positive monism they merge with the laws of nature and of reasoning into a unified doctrinal structure. Sociological knowledge is thus not, as hostile scholars allege, a dialectically woven web, but a product of the same intellectual process which every special science applies when it conducts research in its peculiar territory. The difference between this specializing minute labor and sociology consists merely in the fact that the latter *does not test its material with reference to the particular, but with reference to the universal*. As in the case of every subject and object, there must go along with this testing of all phenomena with reference to their sociological content, *investigation of man with reference to his social nature*. This social psychology is implied in the positive method. It involves search on the one side for the social *ego*, and on the other side for the reaction of the life-conditions upon the *ego*. Because this social psychology teaches *what social demands this ego has*, and the investigation of the social facts teaches *how these demands may be satisfied*, we arrive at sociology as the science of reciprocal human relations. In the field of social psychology America possesses in Lester F. Ward, and in research among social facts the world possesses in Herbert Spencer, a thinker who has opened new scientific paths. The problem is simply to combine the true tendencies in sociological knowledge, and to develop them into a real synthesis.

As this introductory discussion has shown, sociology is a *philosophical discipline not on a basis of pure reasoning* merely, but rather on the basis of all the real and intellectual facts correlated by the *causality of all phenomena*. Social life can be scientifically understood only on the basis of the monistic view of the world; that is, in the light of a philosophy which *subordinates all phenomena to a unifying principle*. It is the inevitable consequence of positivism, which sets over against the *ego* as fact the facts of the external world, that it rests on the same epistemological foundation on which rest all other empirical facts. Without this *positive monism* a sociological regularity is impossible, and I assert without reserve that it is the source of all scientific knowledge whatsoever. This monism alone permits us to understand all existence without omission, in complete logical correlation, as a product of evolving regularity (*Gesetzmässigkeit*). The most important precondition for the success of sociological science is recognition of this monism, and subsumption of all social phenomena under the unity of this fundamental conception.

Although monism declares that *in the last analysis there is regularity in phenomena*, nevertheless the laws derived from this unifying principle *vary for the different main divisions of phenomena*. To what extent the formal regularity applies to the whole phenomenal world; to what extent the physical and the biological laws reappear as social laws; and to what extent there is a *peculiar sociological regularity* — to answer these questions, and to distinguish between the two spheres, is of course the vital question for sociology as science; and it is (1) the fundamental problem of sociology to demonstrate this regularity in the spirit of the comprehensive method to which we have referred. When this problem is once solved, sociology is not merely a branch of human knowledge, but along with philosophy, it is a foundation of all the *psychical sciences*.

Closely connected with this fundamental problem of sociology is (2) the world-problem of the relation of the increase of the human race to sustenance; in brief, the *question of the transformation of matter*. It is certain that the economic processes of the world are to-day in the childhood of thoughtless robber methods, in respect to which North America particularly indulges in very dangerous optimism. The questions whether *free trade* can remain permanently the solution of the world's economic problem, and what economic principles the prosperity of society will demand, both with respect to labor and to the sources of production, are not yet brought into consideration, but national economy plunges without suspicion into the service of this plundering system.

After this world-problem there follow the principal problems of sociology.

The purpose of elevating sociology to the rank of an advisory science gives rise to (3) the third problem: *Has the human will an influence upon social development?* If this question is to be answered optimistically, there open before society the most tremendous prospects; but if it is to be answered pessimistically, there would have to be acquiescence in despair for everything noble, great, good, and beautiful. It is not difficult to understand that this problem is connected with the psychological problem of the freedom of the will and of the value of intellectual freedom. The solution of the problem demands analytical insight into the whole complex of social facts.

A science which seeks to have a share in the enterprises of men necessarily turns its attention to the subject of *future developments*. In point of fact, all the exact and practical sciences do this, whether they teach that once one is one, or that H_2SO_4 sprinkled upon K_2CO_3 volatilizes CO_2 , or that at a given time there will be an eclipse of the moon, etc., etc. In either case we are dealing always with prevision of that which must necessarily occur. To-day, thanks to their obsolete attachment to the antique, many psychical sciences are still training their vision toward the rear, and they are meeting all prevision and prophecy of the inevitable with a comical contempt. From the standpoint of sociology men will learn to overcome this reactionary tendency, and to recognize as scientific no research until, as is always the case with the natural sciences, it strives after *future control of the phenomena*. This influence upon coming social development presupposes, however, the solution of the fourth problem, namely, (4) *What form will social evolution take?* This problem can be solved only on the basis of knowledge of previous social evolution. Its purpose is to gain prevision of the social necessities, in order to measure the inevitable and to learn the extent to which the interposition of the human will can have effect.

In connection with the passing of judgment upon social development, a series of principal problems will be presented. The most important of these may be named as the fifth problem in our series, viz., (5) the question of the *reciprocal relationships between individualism* (subjectivism) *and socialism* (communalism). The realization of the typically human is unquestionably a work of individualization, which has rescued man from the communalistic horde condition. *Personality* is the noble fruit of this impulse. Its excess, however, brings it about that the individual regards himself as the focus of the world. Does social evolution permit the unlimited process of individualization, or is it demanded that it shall be limited by a socialization in the common interest, and how may men succeed in bringing individualization and social-

ism — that is, individual weal and common weal — into harmony? One requires no profound insight into reciprocal human relationships to recognize that this problem is in causal relationship with the question of the political organization of society, with the total of legal development, and with positive ethics; that is, with the norms of conduct derived from the essential interests of human beings. When, however, we take into consideration the nature of man — that is, his native talents — there is at once presented (6) the tremendous *race-problem*, which may be presented in the form of the following questions:

(a) Is the origin of the human race such that it can be regarded as a unity? What social and ethical consequences follow from the answer to this question?

(b) What *value* has the race-concept for social evolution in general, and in particular in given times and places?

(c) What differences of value are to be attributed to the *pure races*, which have developed the permanent forms of racial mixtures through in-and-in breeding, and what values are to be assigned to the *mixed races* with fluctuating traits?

(d) What consequences for social development follow from the fact of *race-difference*, and of the *variety of inherited talents* (*Anlagen*), as products of biological development, of history, of locality, of environment, and of prevailing ideas?

This race-problem, over which fierce struggle is raging to-day in Europe, will not be solved from the single standpoint of ethnology, or anthropology, or geography, or biology, because the race itself is not a product of biological evolution, or of geographical conditions, or of anthropological classification. Its social significance can be made out only on the basis of all those factors with which all the special sciences are concerned, from whose subject-matter sociology attempts to organize its syntheses. This Congress is sitting in a part of the world, and in a federation of states, whose future centres about the solution of the race-problem. Sociology can regard the amalgamation of the races that are in contact merely as an ideal. The mere comparison of the periods, measured by thousands of years, required for the evolution of a race, with the brief periods that come into view in questions of social reform, reduces the belief in a healing harmonization of all the racial characteristics to an absurdity.

Connected with this race-problem is (7) the *problem of public hygiene*, which in the last analysis is the question of rooting-out pathological tendencies. The suppression of hereditary diseases and tendencies to disease — syphilis, gonorrhea, epilepsy, alcoholism, neurasthenia, etc. — is one of the most vital issues of popular life in Europe, where people attend less to the morpho-

logical and physiological conditions of race-development than to the economic and ethical conditions. We can no longer disregard the fact that hereditary tendency to disease has a very considerable part in the misery of the masses. The traditional views of legal philosophy upon the relation of human traits to the moral and social norms are in need of radical revision. The perception that human conduct is only the consequence of the more or less healthy bodily condition of men seems entirely incongruous with our existing systems of penal law; while, on the other hand, in consequence of the increase of population and the crowding of habitable regions, with the consequent increasing complication of all legal relationships, there is need of energetic protection for society against the excesses of the socially unfit.

This whole range of thought presents (8) the eighth problem, namely: In what ratio should the political principles *freedom* and *authority* share in the work of civilization; and in what ratio the political systems *centralization* and *autonomy*? All that has been discovered in this connection up to the present time scarcely rises above the level of mere political gossip. There seems to be constantly increasing justification for the doubts which are expressed about the value of the political principles of the eighteenth and nineteenth centuries. Social evolution presses more and more toward an *organizing order*, if it is to be possible to lead the majority of men into satisfying conditions. It is certain that the individualizing freedom of the present time produces only a diminishing minority, and that it does not bring satisfaction even to these.

In closest connection with the race-question stands (9) the *problem of war and peace*. The short-sightedness of those enthusiasts is more and more evident who regard perpetual peace as possible, because they see in war merely the caprice of the mighty of this world. In fact, it is more and more evident that wars are the consequence of social development; that is, (a) of the increase of population in reaction upon the life-conditions, and (b) of racial antitheses. Profound insight into the nature of politics shows that it would be much more profitable for society if we should treat this question without attempting to damn war off-hand, but if we should try to remove the causes of war.

The solution of the two problems last mentioned will, however, be possible only when the whole realm of politics is raised from its present sphere of dilettantism, of diplomatic intrigue, or of personal interest, to a scientific discipline upon the basis of sociological intelligence. It is no longer in character that science should ignore the most human conspicuous activities, through which all the weal and woe of society is set in motion. The *theory of politics*, as the dynamics of the social forces, demonstrates the practical value

of sociology. Only by means of a system of politics which has a firm hold upon the fundamental tendencies of social development, and which recognizes the needs of society, is it possible to reach the civilization of mankind, that is, a condition in which the common weal controls.

Next to the biological and the political problem in significance stands (10) the *problem of positive ethics*. It may be expressed in the question: To what extent is the prosperity of races, nations, states, and societies dependent upon their morality? We know that the current anthropological conception credits morality with no significance in the destiny of peoples. This is because, from lack of a comprehensive sociological insight, it is not recognized that "good" and "bad" are in closest connection with the prosperity of the species.

Tributary to the solution of this question is (11) the *problem of the morals and the education of men*; which may be divided into the problem of the school, of the family, of the relation of the sexes to each other and in society. Let me merely observe in passing that the question of woman's rights is passing through a phase which an age sociologically mature will look upon as the most incomprehensible confusion of humanity.

I will further merely suggest that these problems inevitably raise (12) the *religious problem*, respecting the philosophical truth of the religious need of mankind, of the ethical and ideal value of religion in general.

Following these chief problems there arises (13) the *civic problem*. This is the question as to the political divisions of mankind and of their territories. With this problem the question as to the sociological idea of the state will be answered. In accordance therewith the practical fulfillment of all the scientific syntheses of sociology is to be found in the state as the organization of power. Among these syntheses belong also the theories as to the relations of the state and of its citizens to society, and to humanity, because the latter make use of the state in order to make progress in satisfying their developing interests.

We see therefore that sociology discovers the principle that governs all social affairs. To solve in principle all social problems is its task. Sociology can do this because it takes account of the relationships in which these problems appear in their essential connection with all existence. Sociology sets bounds to the arrogant narrowness of unlimited specialization. Sociology attempts to secure for the common weal the application of the tremendous results that have been reached by the special positive sciences.

The problems of sociology are thus also the problems of civilization, of humanity.

The totality of problems which we have spoken of as "fundamental," "general," and "principal" indicates the essential content of sociology as science. The problems increase in number in the degree in which sociology is stimulated by the tributary sciences to the solution of new problems. It will be the duty of sociology to organize the results of all scientific activities within the social realm into the sociological synthesis in order to maintain itself constantly on a level with the highest social needs and with the results of science in general. If the world is really a product of immanent regularity, then social development cannot afford to be without a science which shall bring to recognition, over and above all special knowledge, this general regularity. Just as the natural sciences made their way in struggle with the prejudices of the Middle Ages, so must sociology and its philosophical basis, positive monism, make their way through the prejudices of false science and reactionary interests. In this respect the words of Goethe's *Xenie* are, however, still in point:

Amerika, du hast es besser,
Hast keine verfallenen Schlösser.

THE PRESENT PROBLEMS OF SOCIAL STRUCTURE

BY FERDINAND TÖNNIES

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THE problems of social structure we find in a rather confused state at the present moment. In an earlier stage of sociological thinking considerable expectations were attached to the interpretation of social phenomena by means of biological analogies, or what was called the organic theory of society. These expectations may now be said to have been disappointed. The organic theory has almost universally been abandoned. Yet even its severest critics are likely to admit that there is some truth in or behind it, although they seem to be at a loss to explain properly what kind of truth it is.

By a curious coincidence, the three most notable representatives of that doctrine — the Russian, Paul von Lilienfeld, a man of high social standing; the German, Albert Schäffle, with a reputation as a political economist; and the Englishman, Herbert Spencer, whose fame needs not to be emphasized — all departed from life in the year 1903, the two latter in the month of December, all in advanced old age. To these three men sociology owes a debt of gratitude, because, after Comte, they were the first — at least in Europe — to formulate a theory of social life in large outline. From all, but especially from Schäffle and Spencer, we receive, and shall continue to receive, constant and fertile impulses or suggestions. But I feel safe in predicting that it will soon be universally acknowledged that the foundations of their theories were not laid firmly enough for permanently supporting those boldly planned structures of thought.

For a long time past I have cherished the opinion that these authors, as well as nearly all their successors and critics, are hampered by a fundamental lack of clearness as to the subject of their inquiries — a subject which they are in the habit of designating by the very indefinite name of "a society," or, as Schäffle puts it, "*the social body*." Confusion of ideas invariably proceeds from a defect of analytical reasoning; that is to say, of proper distinction.

I believe and assert that three distinct conceptions, the common object of which is social life in its broadest sense, are not sufficiently,

or not at all, kept apart nor even recognized as being distinct, viz., the biological, the psychological, and the sociological in what I call the exclusive sense, the subject of this third conception only being entirely new, as compared with the subjects of other sciences or departments of philosophy. It seems to me to be our fundamental task as philosophical sociologists to deduce from this last conception, and others implied in it, a system of social structure which shall contain the different notions of collective entities in their mutual dependence and connection; and I firmly trust that out of such a system will be gained a better and more profound insight into the evolution of society at large, and into its historical phases, as the life of these collective entities. It is therefore in the struggles, first between any of these groups and the individuals composing it; second, between their different forms and kinds—for instance, the struggles between church and empire; between church and cities; between church and state; between cities and other corporations; between the sovereign state and feudal communities, and consequently established orders or estates; between single states and a federal state—it is in these and similar struggles, presupposing the *existence* of those collective entities, that the growth and decay of higher civilizations exhibit themselves most markedly.

I

When we speak of a house, a village, or a city, the idea immediately arising in our minds is that of a visible building, or of larger or smaller groups of buildings; but soon we also recollect the visible contents of these buildings, such as rooms and cellars and their furniture; or, when groups of buildings are concerned, the roads and streets between them. The words “house,” “village,” and “city” are, however, used in a different sense when we have in mind the particular contents of buildings which we call their inhabitants, especially their human occupants. Very often, at least in many languages, people are not only conceived of as the inhabitants of, but as identical with, the buildings. We say, for instance, “the entire house,” “the whole village”—meaning a lot of people the idea of whom is closely connected with the idea of their usual dwelling-place. We think of them as being one with their common habitation. Nevertheless it is still a visible union of individuals which we have in mind. This visible union, however, changes into an invisible one, when it is conceived of as lasting through several generations. Now the house will become identified with a family or perhaps with a clan. In the same manner a village community or a township will be imagined as a collective being, which—although not in all, yet in certain important

respects — remains the same in essence, notwithstanding a shifting of matter; that is to say, an incessant elimination of waste portions — men who die — and a constant accretion of fresh elements — children born. Here the analogy with the essential characteristics of an organism is obvious. Vegetable and animal organisms likewise are only represented by such elements as are visible at any time, and the law of life consists in this, that the remaining portions always predominate over the eliminated and the reproduced ones, and that the latter by and by move and fill up the vacant spaces, while the relations of parts — *e. g.*, the coöperation of cells as tissues, or of tissues as organs — do not undergo a substantial change. Thus such an application of biological notions to the *social life* of mankind — as the organicist theories or methods set out to do — is not to be rejected on principle. We may, in fact, look upon any community of this kind — maintaining itself by receiving its parts — as being a living whole or unity. This view is the more plausible if the renewal itself is merely biological, as indeed is the case in the human family, and, as we think, to a still greater extent — because a family soon disperses itself — in certain larger groups: a tribe, a nation, or a race; although there is involved in this view the question whether there is a sameness of nature — or, as we usually say, of blood — guaranteed, as it should be, by an in-and-in breeding of parents (German, *Inzucht*). Indeed, this self-conservation of a group is the less to be expected, the smaller the group; and it is well known among breeders that it is necessary for the life of a herd not to continue too long selecting sires of the same breed, but from time to time to refresh the blood by going beyond the limits of a narrow parentage, and crossing the race by mixtures with a different stock.

At any rate, this is what I should call a purely *biological* aspect of collective human life, in so far as that conception is restricted to the mere existence of a human group, which, so to speak, is self-active in its maintenance of life.

This aspect, however, does not suffice when we consider social units of a local character, which also continue their existence, partly in the same, but partly in a different manner. With reference to them we do not think exclusively of a natural *Stoffwechsel*, as it is effected by births and deaths of the individuals composing the body, but we also consider the moving to and fro of living men, women, and children, the ratio of which, like the ratio of births and deaths, may cause an increase or a decrease of the whole mass, and *must* cause one or the other if they do not balance. In consequence of this, we also have less reason to expect a biological identity of the stock of inhabitants at different times than a lasting connection between a part of space (the place), or rather a

piece of the soil, and a certain group of men who dwell in that place and have intercourse with each other, although the place itself grows with the number of its inhabitants, and although even among these inhabitants there be, for instance, not one direct descendant of those who occupied the place, say, a hundred years ago. We may, it is true, take it to be the rule that at least a certain nucleus of direct descendants keeps alive through many generations — a rule so much more certain if it is a large place, a whole region, or even a country that we have in mind. Still we shall not hold this to be a *conditio sine qua non* for acknowledging the village or the city to be the same; it being in this respect much more relevant that the nucleus of the place, of the "settlement," has endured and has preserved itself through the ages. Now, since place and region, air and climate, have a very considerable effect upon the intelligence and sentiment of the inhabitants, and seeing that a considerable change may not justly be expected with respect to this, except when the minds as well as the external conditions of the newcomers are totally different from those of the older strata, we may consider the identity of a place, in so far as it is founded upon the social connection of men with a part of the soil, as a *psychological* identity, and call this aspect of social life a psychological aspect. There can be no doubt that this psychological aspect is in great part dependent upon the biological aspect, and is, as a rule, closely interwoven with it. Yet it needs but little reflection to recognize that both are also to a certain extent separate and independent of each other. The subject-matter of a social psychology is different from the subject-matter of a social biology, though there exist a great many points of contact between them, and though both, apart from the foundations here given to them, may be applied to animal as well as to human societies.

II

Neither of the above-mentioned conceptions of a continuous unity or whole implies that the essential characteristic of the unity is perceived and recognized by those who belong to it, much less that it is perceived by others, by outsiders. And this is the third idea, by far the most important one for the present consideration — the idea of what I purpose to designate by the name of a *corporation*, including under it all social units whatever, in so far as they have this trait in common, that the mode of existence of the unity or whole itself is founded upon the consciousness of its existence, and consequently that it perpetuates itself by the conception of its reality being transmitted from one generation to the

next one; which will not happen unless it be done on purpose by teaching, and generally in the form of tradition. This evidently presupposes human reason and human will, marking off sharply this third genus from any kind of animal subhuman society.

We are now to give closer attention to this conception. For the most part, though not always, it is the conception of a unity different from the aggregate of members; the idea of a psychical or moral *body*, capable of willing and of acting like a single human being; the idea of a self or person. This person, of course, is an artificial or fictitious one. It represents indeed, as the former two conceptions did, a unity persisting through the change of its parts; but this unity and identity persisting in the multitude are neither biological nor directly and properly psychological, but must, in distinction from these, be considered as specifically *sociological*. That is to say, while the second is the social consciousness or social mind itself, this is the product of it, and can be understood only by looking into the human soul, and by perceiving thoughts and wills which not only have a common drift and tendency, but are creators of a common work.

The idea, however, of a body capable of willing and acting is, as said above, not always, and not necessarily, implied in the idea of a sociological unit. There is a conception preceding it, as protoplasm precedes individual bodies; namely, the general idea of a society (or a community, if this important distinction is adverted to), which is not essentially different from our second idea of a psychological unit, except in this one respect, accessory to it, that the idea of this unit be present somehow in the minds of the people who feel or know themselves as belonging to it. This conception is of far-reaching significance, being the basis of all conceptions of a social, as contrasted with a political, corporation. It therefore comprises especially those spheres of social life which are more or less independent of political organization, among which the economical activity of men is the most important, including, as it does, domestic life as well as the most remote international relations between those who are connected exclusively by the ties of commercial interest. But practically it is of little consequence whether this general idea be considered as psychological or as sociological, unless we precisely contemplate men who consciously maintain their own conception of their own social existence, in distinction from other ideas relating to it, chiefly when it is put in contrast to the idea of a political corporation, and the political corporation of highest import is concerned — the state. And it was exactly in these its shifting relations to the state that the idea of society proper — though without recognition of its subjective character — was evolved about fifty years ago by some German

theorists — notably Lorenz Stein, Rudolph Gneist, and Robert Mohl — who were more or less strongly under the sway of Hegelian philosophy, seeing that Hegel in his *Rechtsphilosophie* develops his idea of human corporate existence under the threefold heading of (1) the family, as “thesis,” (2) civil society, as “antithesis,” and (3) the state, as “synthesis” of the two former.

But, though I myself lay considerable stress upon this general notion of society, in juxtaposition and opposition to the state or political society, I still regard it as more indispensable to a theory of social structure to inquire into the nature and causes of what may be called, from the present point of view, genuine corporations; that is, those conceived of as being capable of willing and acting like a single individual endowed with reason and self-consciousness. The question arises how a “moral person” may be considered as possessing this power.

Evidently this is an impossibility, unless one single individual, or several together, are willing and acting *in the name of* that fictitious being. And in order justly to be taken for the volitions and acts of an individual distinct from their own individualities, those volitions and acts must be distinguishable by certain definite marks from the rest of their willing and acting, which they do in their own name; they must be differentiated formally. There must be a tacit or an open understanding, a sort of covenant or convention, that only volitions and acts so differentiated shall be considered as volitions and acts of the said moral person whom that one or those several individuals are supposed to represent. By the way, this question of marks and signs, consensual or conventional, by which a thing, physical or moral, not only is recognized as such, but by which its value (or what it is *good for*) is differentiated from its existence (or what it *is*), pervades all social life and mind, and may be called the secret of it. It is clear that certain signs may easily be fixed or invented whereby the volitions and acts of a single individual may be differentiated from the rest as being representative. But how if there are more than one, who only occasionally have one will and act together, and who cannot be supposed to agree in their feelings as soon as they are required to represent their moral person? It is well known that these must be “constituted” as an *assembly* or as a whole capable by its constitution to deliberate and, what is more, to resolve and act. It must be settled by their own or by the will of another person (1) under what conditions, and with respect to what subject-matters, their resolutions shall be considered as representing declarations of will of their own body; and (2) under what conditions, and with respect to what subject-matters, declarations of will of this body shall be valid as declarations of will of the moral person they represent.

It is therefore the *constitution* of a multitude into a unity which we propose as a fourth mode, and as a necessary consequence of the third one, unless the moral person be represented exclusively by a single man or woman as a natural person. The Many constitute themselves or are constituted as a body, which is, as far as it may be, similar to a natural person in such relations as are essential precisely for the notion of a person. Consequently, this body also is a unity, but a unity conceived *a priori* as being destined for a definite purpose, viz., the representation of a moral person — the third or sociological kind of unity. And it is different from that third notion by this very relation only, which evidently cannot be inherent in that person himself: that, in consequence of this relation, it has a visible existence apart from its own idea, while the moral person represented is nothing beyond his own idea. We may distinguish, therefore, between five modes of existence in a moral person represented by a body: (1) the ideal existence in the minds of its members; (2) the ideal existence of the body constituted, which represents the moral person, being as well in the minds of the natural persons who compose that body as in the minds of members of the corporation generally; (3) the visible existence of this body, being the assembly of natural persons, willing and acting under certain forms; (4) the intelligible existence of this assembly, being conditioned by a knowledge, on the part of those who externally or theoretically perceive it, of its constitution and its meaning; (5) the intelligible existence of the moral person or the body represented, being conditioned by a knowledge of the relation between this corporation and the body representing it, implying the structure of the former in the first, and of the latter in the second instance.

The visible existence of an assembly means that members are visible as being assembled, but the assembly as a body can be recognized only by a reflecting spectator who knows what those forms mean, who "realizes" their significance, who *thinks* the assembly. Of course, a corporation also, apart from its representation, can be perceived only mentally, by outsiders as well as by its own members, and these are different perceptions (distinguished here as ideal and intelligible existence): members perceiving it directly as a product of their own will, and therefore in a way as their property (a thing which they own); and outsiders perceiving it only indirectly, by knowing the person or body that represents it; this being an external perception only, unless it be supplemented by a knowledge of its peculiar mode of being, that is, of its constitution and of the relations which members bear to the whole, and the whole to its members.

But it is, above all, in this respect that great differences exist between different kinds of corporations. The first question is whether individuals feel and think themselves as founders or authors or at least as representative ideal authors of their own corporation. Let us take an obvious example. Suppose a man and a woman contract a marriage (we waive here all questions of church or state regulations for making the marriage tie public). They are said to found a family. Now, the children springing from this union and growing up in this family cannot justly feel and think themselves as the creators or authors of it, as long as they are dependent upon their parents. However, they partake of it more and more consciously, and some day they may take upon themselves the representation of this whole internally and externally, in place of their father and mother. They may learn to feel and to think of themselves as bearers of the personality of this ideal being, playing, so to speak, the parts of the authors and founders, whom they also may survive, and will survive in the normal course of human events; and they may continue the identity of the family beyond the death of their parents. They may maintain the continuity of this identical family, even when new families have sprung from it which may or may not regard themselves as members of the original one. The proposition that it exists still is true at least for those who will its truth, and who act upon this principle; nay, it is by their thought and will that they are creating it anew, as it was made originally by the wills of the first two persons. A different question is whether the existence of this corporation will be recognized and acknowledged by others, who may stand in relations to its members, or may simply be impartial theoretical spectators.

But, further, there is this fundamental difference in the relation of individuals to that ideal entity which they think and will, whether they be its real or merely its representative authors, viz.: (1) they may look upon the corporation, which they have created really or ideally, as upon a thing existing for its own sake, as an end in itself, although it be at the same time a means for other ends; or (2) they may conceive it clearly as a mere tool, as nothing but an instrument for their private ends, which they either naturally have in common, or which accidentally meet in a certain point.

The first case appears in a stronger light, if they consider the social entity as really existing, and especially if they consider their corporation as a living being; for a real thing, and especially a living thing, has always some properties of its own. The latter has even something like a will of its own; it cannot be conceived as being disposable, divisible, applicable, and adaptable at pleasure to any purpose, as a means to any end — this being the notion of

pure matter, as it exists only in our imagination; and therefore a thing which has merely a nominal existence would be really nothing but a mass of such imaginary matter, absolutely at one's disposal, offering no resistance, being stuff in itself, that is to say, potentially anything one may be able to make, to knead, to shape, or to construe out of it (of course, real matter may and will more or less approach to this idea). On the other hand, to think of an ideal thing as being ideal is not the same as to think of it as imaginary matter; but if one aims at a certain object, if one follows out one's designs, one is constrained by a psychological necessity to break resistances and to subject things as well as persons to one's own will; one tends to make them all alike, as "wax in one's hand," to remove or to oppress their own qualities and their own wills so as to leave, as far as possible, nothing but a dead and unqualified heap of atoms, a something of which imaginary matter is the prototype. Of course, it is only as a tendency that this dissolving and revolutionary principle is always active, but its activity is manifest everywhere in social life, especially in modern society, and characterizes a considerable portion of the relations of individuals to each other and consequently to their corporations. As long as men think and regard "society" — that is to say, their clan or their polis, their church or their commonwealth — as real and as truly existing; nay, when they even think of it as being alive, as a mystical body, a supernatural person — so long will they not feel themselves as its masters; they will not be likely to attempt using it as a mere tool, as a machine for promoting their own interests; they will look upon it rather with awe and humility than with a sense of their own interest and superiority. And, in consequence of feelings of this kind, they even forget their own authorship — which, as a rule, will indeed be an ideal one only; they will feel and think themselves, not creators, but creatures of their own corporations. This is the same process as that which shows itself in the development of men's regular behavior toward their gods, and the feeling and thinking just mentioned are always closely related to, or even essentially identical with, religious feeling and thinking. Like the gods themselves, to whom so regularly *la cité antique*, with its temples and sanctuaries, is dedicated, the city or corporation itself is supposed to be a supernatural eternal being, and consequently existing not only in a real, but in an eminent sense.

But, of course, all feelings of this kind are but to a limited extent liable to retard the progress of a consciousness of individual interests, or, as it is commonly spoken of — with a taint of moral reproach — of selfishness. As a matter of fact, it is the natural ripening of consciousness and thinking itself which makes reflection

prevail over sentiment, and which manifests itself, first and foremost, in reflection upon a man's own personal interest, in the weighing and measuring of costs and results; but, secondly, also in a similar reflection upon some common interest or business which a person, from whatever motive, selfish or not, has made his own affair; and, thirdly, in that unbiased interest in and reflection upon the nature and causes of things and events, of man's individual and social existence, which we call scientific or philosophical.

All reflection is, in the first instance, analytical. I have spoken already of the dissolving principle which lies in the pursuing of one's own personal affairs, of which the chase after profit is but the most characteristic form. But the same individualistic standpoint is the standpoint, or at least the prevailing tendency, of science also. It is *nominalism* which pervades science and opposes itself to all confused and obscure conceptions, closely connected, as it is, with a striving after distinctness and clearness and mathematical reasoning. This nominalism also penetrates into men's supposed collective realities (supernatural or not), declaring them to be void and unreal, except in so far as individual and real men have consented to make such an artificial being, to construct it, and to build it up mentally. Knowledge and criticism oppose themselves to faith and intuition, in this as in most other respects, and try to supplant them. To know how a church or a state is created means the downfall of that belief in its supernatural essence and existence which manifestly is so natural to human feeling and intellect. The spirit of science is at the same time the spirit of freedom and of individualistic self-assertion, in contradiction and in opposition to the laws and ties of custom — as well as of religion, so intimately connected and homologous with custom — which seem entirely unnatural and irrational to analytical reasoning. This reasoning always puts the questions: What is it good for? Does it conduce to the welfare of those whom it pretends to bind or to rule? Is it in consonance with right reason that men should impose upon themselves the despotism of those laws and of the beliefs sanctioning them? The classical answer has been given in a startling fashion by one whom Comte called the father of revolutionary philosophy. There is, says Thomas Hobbes, a realm of darkness and misery, founded upon superstition and false philosophy, which is the church; and there is, or there might be, a realm of light and of happiness, founded upon the knowledge of what is right and wrong; that is to say, of the laws of nature, dictated by reason and by experience, to check hostile and warlike individual impulses by a collective will and power; this realm is the true state, that is to say, the idea and model of

its purely rational structure, whether it may exist anywhere as yet or not. Hobbesianism is the most elaborate and most consistent system of the doctrine commonly known as that of "natural law" (*Naturrecht*), including, as it always did, a theory of the state. As a matter of fact, this doctrine has been abandoned almost entirely, especially in Germany, where it had been exerting a very considerable influence in the century which preceded the French Revolution, when even kings and absolutist statesmen were among its open adherents. It has been controverted and abandoned ever since the first quarter of the nineteenth century — a fact which stands in manifest connection with the great reaction and restoration in the political field following the storms of that revolution and of Bonapartist rule in Europe. There is hardly a liberal school left now which dares openly profess that much derided theory of a "social compact." This, I believe, is somewhat different in the United States. As far as my knowledge goes, this theory — that is to say, an individualistic construction of society and of the state — is still the ordinary method employed in this country for a deduction of the normal relations between state or society, on the one hand, and individuals, on the other; for, as needs no emphasizing, it is not the opinion of an original contract in the historical sense that is to be held in any way as a substantial element of the theory. And yet the obvious criticism of that pseudo-element has been the most powerful argument against the whole theory, which consequently has seldom met with an intelligent and just appreciation in these latter days. And it is in opposition to it that, apart from a revival of theological interpretations, the recent doctrine of society or state as an organism has become so popular for a time. This doctrine, of course, was an old one. Not to speak of the ancients, in the so-called Middle Ages, it had preceded the contract theory as it has supplemented it in more modern times. It was, indeed, coupled with the theological conceptions and religious ideals so universally accepted in those days, although it was not dependent upon them. The doctrine of St. Thomas and of Dante, however, includes a theory of the universal state; that is to say, of the empire, not a theory of society, of which the conception had not yet been formed, as we may safely say that a consciousness of it did not exist. This traditional organicism — applied as well to the church, the mystic body of which Christ was the supposed head — has been transferred of late to "society," after it had regained fresh authority as a political doctrine. However, the conception of a "society," as distinguished from political or religious bodies, is much more vague and indefinite. Either it is to be taken in the

first and second sense, which I have pointed out as a biological or a psychological aspect of collective life, in which case organic analogies hold, but the whole consideration is not properly sociological; or it may be taken in our third, or sociological, sense, in which case it implies much less than any corporation the idea of what may be called an organization. It is well known that a lively controversy has been aroused about the new organicist theory, as proposed by Mr. Spencer and others, chiefly among those sociologists who centre about the *Institut international* of Paris, where the late lamented M. Tarde played so prominent a part. M. Tarde has been among the foremost combatants against the vague analogies of organicism; and I fully agree with most of his arguments as set forth in the third sociological congress of 1897. I even flatter myself on having anticipated some of them in an early paper of mine upon Mr. Spencer's sociological work, which paper, however, did not become known beyond the small public of the *Philosophische Monatshefte* (1888). I have especially, and to a greater degree than M. Tarde, insisted upon the radical difference between a physiological division of labor and that division of labor which is a cardinal phenomenon of society. I said: If we justly call it a division of labor that England manufactures cotton and China produces tea, and that the two countries exchange their products, then there is not and has not been a common labor or function preceding this division and dividing itself, as in the case of an organism; no state of society being historically known where China and England were one whole, working in harmony upon the spinning-wheel and upon the tea-plant. This is far from being true; each had its own historical development, until they met in the mutual want of barter; and even this consideration implies that the countries themselves may justly be said to entertain trade and commerce with each other, though this is hardly more than a *façon de parler* with respect to a country like China. It may be objected that there is a better analogy, if we think of a primitive household, where labor is indeed one and is shifting among members of the community, while at a later stage it splits up into several families, some cultivating the soil, some becoming warriors, or priests, or artisans and tradesmen. And in the same way a village community, even an independent township like the ancient or medieval city, and a whole territory of which a city is the centre, may reasonably be conceived of as one real household, of which all single households form organic parts. They would thus be contrasted with modern society, which is more adequately conceived of as a mere aggregate of individual households, each pursuing its own interest, maybe at the cost of all the

others. This is my own objection, and this view is contained in my own theory of *Gemeinschaft* and *Gesellschaft*, meaning the dualism of that primitive economical condition, surviving in many respects down to our own days, on the one hand, and "commercial" or "capitalistic" society, of which the germs are traceable in any form of what, with an abstract term, may be called communism, on the other. It is the former sense that even modern political economy may be spoken of (as we style it in German) as "national" economy. But even if this be allowed, the organic analogy does not hold other than in a rather indefinite way. Where is the one "social body," which thus evolves its organs and members, being in its early stage like a single household or a village community, and growing to be a complex *ensemble* of manors and municipalities and great cities, some of which have their manufactures working for foreign export, some for inland consumption? Is it England that has taken a development of this kind? Or are England and Wales? Or are Scotland, and even poor conquered Ireland, to be included?

The more we should try to follow out the admirable attempt which Herbert Spencer has made in this direction, of employing the organicist view as a working hypothesis, the more we should become convinced that our real insight into the lines along which social evolution travels is more hampered than promoted by that method of biological analogies.

III

But did I not say there was truth in the biological conception of social life? Indeed I did, and I say so again, if social life is considered externally, and if we speak of a group as a living whole, where life is understood in its genuine sense, that is to say, biologically. And from this point of view, as that famous term, "physiological division of labor," is borrowed from economical fact and theory, we may *vice versa* apply physiological terms to social life, considered externally. We may speak of organs and functions in a nation or society, or even with respect to mankind at large. We may metaphorically call the civilized nations the "brain" of humanity, and we may say that the United States has become an independent lobe of the cortex in the course of the last forty years. In the same way it was only lately, I understand, that your President spoke of railways as the arteries through which the blood of trade is circulating. The force of this metaphor will, I believe, not be impaired by the fact that several theorists point in more than a figurative sense to money, or credit, as the social fluid into

which all substances of commodities are changed, and which nourishes again the social brain and social muscles; that is to say, men and women who perform mental and physical work; in consequence of which analogy banks, and their correspondence by letters and bills and checks, would, more than railways, resemble arteries and veins. Of course, it would be small trouble to adduce a number of similar ambiguities, which make sociological inquiries of this kind appear as a matter of rhetoric and poetry, but not of science.

Is there no other, no philosophical truth at least in the comparison of a corporation to a living body? If there is, it can, according to the present view, be only in this respect, that a corporation may be thought and felt as an organic whole, upon which the members think and feel themselves dependent in such a way that they consider their own individual existence as subservient to the life of the whole. The question whether a "society" is an organism must be kept apart from the question whether there are "societies" the relations of which to their members are so qualified as to imply thoughts and feelings of that kind on the part of their members. We are well aware that social systems, which have been called by some eminent authors "ancient society," truly exhibited this characteristic trait. Why is not modern society — and, above all, the modern state — an organism in this peculiar sense?

I believe, indeed, that there is strong reason for controverting the theory in its application to these collective beings as they actually are. We live, as everybody knows, in an individualistic age, and we seek each other's society chiefly for the benefit that accrues from it; that is to say, in a comparatively small degree from motives of sentiment, and to a comparatively great extent from conscious reflection. It is this which makes us regard the state also as an instrument fit for serving our particular interests, or those we have in common with some or with all of our fellow citizens, rather than as an organism, ideally preëxistent to ourselves, living its own life, and being entitled to sacrifices of our life and property in its behalf. It is true that in extraordinary times we live up to this view, but then we do not speak so much of society and of the state as of the fatherland which puts forward its claim to what we call our patriotism. A feeling of brotherhood and fellowship, of which in ordinary times the traces are as sadly scarce among compatriots as among those who are foreigners to each other, rises in moments of public danger from the bottoms of our souls in effervescent bubbles. The feeling, to be sure, is more of the nature of an emotion than of a lasting sentiment. Our normal relations toward our present

societies and states must not be taken as being accommodated to this extraordinary standard. They are, howsoever men may boast of their patriotism, generally of a calm and calculating character. We look upon the state, represented as it is by its government, as upon a person who stands in contractual rather than in sentimental relations to ourselves. Certainly this view is more or less developed in different countries, under different circumstances, with different individuals. But it is the one that is indorsed by the most advanced and the most conscious members of modern societies, by those powerful individuals who feel themselves as masters of their own social relations. Societies and states are chiefly institutions for the peaceful acquisition and for the protection of property. It is therefore the owners of property to whom we must look when we are inquiring into the prevailing and growing conceptions of society and of the state. Now, it cannot be doubted that they do not consider either society or the state as representing that early community which has always been supposed to be the original proprietor of the soil and of all its treasures, since this would imply that their own private property had only a derivative right — derived from the right and law of public property. It is just the opposite which they think and feel: the state has a derivative right of property by their allowance and their contributions; the state is supposed to act as their mandatary. And it is this view which corresponds to the facts. A modern state — it is by no means always the youngest states that are the most characteristic types of it — has little or no power over property.

I cannot refrain from quoting here, as I have done elsewhere, a few sentences of the eminent American sociologist, Mr. Lewis Morgan, in which he sums up his reflections upon modern as contrasted with "ancient society:"¹ "Since the advent of civilization the outgrowth of property has been so immense, its forms so diversified, its uses so expanding, and its management so intelligent in the interests of its owners, that it has become, on the part of the people, an unmanageable power. The human mind stands bewildered in the presence of its own creation." He thinks it is true that "the time will come when human *intelligence* will rise to the mastery over property, and will be able to *define* the relations of the state to the property it protects, as well as the obligations and the limits of the rights of its owners," declaring himself unwilling, as he does, to accept "a mere property career" as the final destiny of mankind.

But this outlook into a future far distant — although it was written, I believe, before there were any of the giant trusts estab-

¹ *Ancient Society*, p. 552.

lished, and ere anybody in these states seemed to realize the dangers of the enormous power of combined capital — does not touch immediately the present question. It is the actual and real relation of the state to individuals which best reflects itself in the lack of power over property, as pointed out by Mr. Morgan, or in other words, in the subservient position which the governments hold, in all countries more or less, toward the wealth-possessing classes. I do not say — although maybe I think — that this ought to be different; “*je ne propose rien ; j'expose.*” It is merely as a theoretical question that I touch upon this point. But I am not prepared to deny that it is also the great practical problem of social structure — to reconstruct the state upon a new and enlarged foundation; that is to say, to make it, by common and natural effort, a real and independent being, an end in itself, a common wealth (spelled in two words) administered not so much for the benefit of either a minority or a majority, or even of the whole number of its citizens, as for its own perpetual interests, which should include the interests of an indefinite number of future generations, the interests of the race. It cannot be overlooked that there are at present many tendencies at work in this direction, but I believe they are in part more apparent than real. The problem, we should confess, is an overwhelming one; and I for one do not feel at all sure that this splendid and transcendent civilization of ours will overcome its difficulties; that there will be sufficient *moral* power, even if intelligence should rise to a sufficient height, for solving in a truly rational way the “social question” as a question of social structure.

To sum up the argument, I put it in the form of a few theses or propositions:

(1) The object of sociological theory proper, in distinction from either biological or psychological, though these be never so closely connected with it, is the *corporation*, for the most part represented, as it is, by a constituted body.

(2) Religious faith makes some of the most important corporations appear as real, organic, mystic, and even supernatural beings. Philosophical criticism is right in discovering and explaining that all are creations of man, and that they have no existence except in so far as human intellect and human will are embodied in them.

(3) But nominalism is not the last word of a scientific philosophy. The existence of a corporation is fictitious indeed, but still is sometimes more than nominal. The true criterion is whether it be *conceived* and felt as a mere tool or machine, without a life of its own, or as something organic, superior to its temporary members. The true nature, however, of this conception is legible only from facts.

(4) As a matter of fact, modern society and the modern state are prevailingly of a nature to correspond to an individualistic and nominalistic conception and standpoint. This is distinctly perceptible in the relation of the public power to private property.

(5) This relation, and the relation dependent upon it, may substantially change in the course of time. An organic commonwealth may spring into existence which, though not sanctioned by any religious idea, and not claiming any supernatural dignity, still, as a product of human reason and conscious will, may be considered to be real in a higher sense than those products, as long as they are conceived as mere instruments serving the interests and objects of private individuals.

EVOLUTION OF SOCIAL STRUCTURES

BY LESTER FRANK WARD

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It is not my intention to attempt any general treatment of social structures. That subject would be altogether too large for a single paper. But, aside from that, there is no need of any such treatment. Probably nine tenths of all the work done in sociology thus far is of that kind. It consists chiefly in the description of social structures or in discussions of different aspects which they present. But thus far I have met with no work dealing with the evolution of social structures. By this I mean that sociologists have been content to take up the social structures which they find actually in existence, and to consider and examine them, often going into the minutest details and exhaustively describing everything in any way relating to them as finished products; but no one has as yet attempted to explain what social structure is, or how these various products have been formed.

As a general proposition, social structures may be said to be human institutions, using both terms in the broadest sense. In all grades and kinds of society there are human institutions, and, indeed, society may be said to consist of them. If we examine any one of them, we find that it possesses a certain permanence and stability. It is not a vague, intangible thing that will vanish at a touch, but something fixed and durable. This is because it possesses a structure. A structure is something that has been constructed, and a study of social structure is the study of a process and not of a product. Our task, therefore, is not to examine the various products of social construction, but to inquire into the methods of social construction.

Our language, like our ideas, is more or less anthropomorphic. Man constructs, and the products are called structures. He takes the materials that nature provides, and with them he builds whatever he needs — houses, vehicles, boats, cities. Each of these products is a structure, but it is an artificial structure. The human

method of constructing is an artificial method. This consists in first forming in the mind an ideal of the finished product, and then arranging the materials in such wise that they will realize that product. The end is seen from the beginning. It is a final or teleological method. Nature also constructs, but the method of nature is just the opposite of that of man. There is no foresight, and the materials are added in small increments until the structure is completed. The method of nature is a differential or genetic method. All natural structures are of this class, and social structures are natural structures.

But natural structures are not so simple as might appear from this statement. They do not consist in the mere mechanical apposition of the raw materials brought into material contact. This would produce only a mass, a heap, a mixture; it would not produce a structure. A structure implies a certain orderly arrangement and harmonious adjustment of the materials, an adaptation of the parts and their subordination to the whole. How does blind nature accomplish this? It does it according to a universal principle, and it would be impossible to convey any clear conception of the process of social structure without first setting forth, at least briefly, the character of this principle.

It is not only in human society that natural or genetic structures are formed. The organic world affords perhaps the most striking example of the process, and all organisms not only consist of such structures but are themselves organic structures. Every other department of nature furnishes examples, but there is one other in which the process is so simple that it is easily grasped by the average mind. This is that of astronomy. Each one of the heavenly bodies is a natural structure formed by the raw materials and blind forces of nature, and yet the heavenly bodies are highly symmetrical and perfectly ordered structures. The solar system and all other star systems are also such structures, in which there is perfect adjustment of parts and subordination of the parts to the whole.

This last example will serve a good purpose in explaining the principle, because we are already familiar with the facts of centrifugal and centripetal forces which constitute the principle by which the systems are maintained. This is, in fact, the principle that underlies all genetic structures; but in other departments there are many other elements to be considered which complicate the process. The principle may then be stated in its most general form as *the interaction of antagonistic forces*. In astronomy these are reduced to the two classes, the centrifugal and centripetal; but in other departments there are many antagonistic forces, which need not directly oppose one another, but which modify and restrain one another in a great variety of ways. Any one of these forces considered by itself alone

is in the nature of a centrifugal force. In astronomy it is well known that if the centrifugal forces were to operate alone, the systems would be immediately destroyed. This would be equally true of any other system and of all natural structures. Any force considered in and by itself is destructive, and no single force could by any possibility construct a system. All systems and all structures are the result of the interaction of a plurality of forces checking and restraining one another. A single unopposed force can produce only motion of translation. A plurality of interacting forces holds the materials acted upon within a limited area, and while no matter or force can be destroyed, the paths are shortened and converted from straight lines into curves and circles, and the bodies impinged are made to revolve rapidly in limited circuits and vortices, and to arrange themselves into orderly systems with intense internal activities. This is the fundamental condition of all organization, and natural systems or genetic structures are organized mechanisms. If we apply it to the bodies or substances which make up the physical world, we see that the intensive internal activities which they thus acquire constitute what we call their properties, and the differences in the properties that different substances possess are simply the different activities displayed by their molecular components due to the differences in their organization. This doubtless applies to chemical elements as well as to inorganic or organic compounds, and many chemists regard even an atom as a system somewhat analogous to a solar system.

In the organic world the process of organization, due to successive recompounding of the highest organic compounds, undergoes a higher degree of organization, and protoplasm is evolved, which is capable of carrying the process on upward, and of producing the progressively higher and higher forms of life. The lowest of these forms consist of what are called unicellular organisms, which have the power of multiplication or increase of numbers, but are incapable of any higher development. They are called "protozoans," and represent the initial stage in organic development. The next step consists in the organic union of two or more, usually many, of these unicellular organisms into a multicellular organism. Such organisms are called "metazoans," and with this stage begins the most important class of organic structures, viz., tissues. All the organic forms with which any but the microscopist is familiar belong to this meta-zoic stage and present a great variety of tissues with which everybody is more or less familiar.

I will not go farther with these illustrations from the inorganic and organic world; but it was essential, as will soon appear, to go thus far. Social structures are identical, in these fundamental aspects, with both inorganic and organic structures. They are the products

of the interaction of antagonistic forces. They also pass from a primordial stage of great simplicity into a secondary, more complex stage, and these two stages are closely analogous to the protozoic and metazoic stages of biology. I call them the "protosocial" and "metasocial" stages, respectively.

If we set out with the simple propagating couple, we soon have the primitive family group consisting of the parents and children. The children are of both sexes, and they grow to maturity, pair off in one way or another, and produce families of the second order. These do the same, resulting in families of the third order, and so on. After a few generations the group assumes considerable size and constitutes first a horde and finally a clan. The clan at length becomes overgrown and splits up into several or many clans, separating more or less territorially, but usually adopting the rule of exogamy, and living on comparatively peaceful terms at no great distance from one another. Their mode of reproduction is exactly analogous to the process of reproduction by division in the Protozoa, and this is what I characterize as the protosocial stage in race-development.

But the multiplication of clans through continuous reproduction in a geometrical progression, coupled with the limits prescribed by the food-supply, results in the wider and wider separation of the clans, until at length certain clans or hordes will have become so far removed from the primary centre of dispersion as to lose all connection with it. At the low stage of mental development necessary to such a race of beings scarcely as much as a tradition would ultimately remain of the existence of a primordial group from which all had descended. One clan would keep budding off from another, and moving out farther and farther along lines of least resistance, until a great area of the earth's surface would at last become thus sparsely inhabited by a multitude of clans, each knowing only the few that are located nearest to it. As the dispersion takes place in all directions from the original centre, or as nearly so as the configuration of the country and the nature of the food-supply will permit, those migrating in opposite directions become, after a sufficient lapse of time, so widely separated from one another as to constitute wholly distinct peoples. They all have languages, but in time the local variations that they naturally undergo render them to all intents and purposes different languages, at least so much so that if individuals of these long-separated groups should chance to meet, they could not understand one another. It would be the same with their customs, beliefs, and religion. They would have become in all essential respects different races.

We will suppose that in the end a whole continent is thus peopled with these alien hordes and clans, which would now have become

innumerable. The process by which this is brought about is what I have called "social differentiation." But it cannot always last. A new process supervenes, and the stage of social differentiation is succeeded by a stage of social integration. The protosocial stage closes, and the metasocial stage comes on. In the protosocial stage the social structure is the simplest possible. The horde or clan is composed altogether of similar elements. The multiplication of such groups can be nothing but a repetition of similar groups, and there can be no change or variation, and therefore no progress or structural advance. Throughout the protosocial, as throughout the protozoic stage, there is no structural development, no evolution. The differentiation consists simply in the multiplication of practically identical clans. Just as organic evolution began with the metazoic stage, so social evolution began with the metasocial stage. So, too, as the metazoic stage was brought about through the union of several or many unicellular organisms into a multicellular organism, so the metasocial stage was brought about by the union of two or more simple hordes or clans into a compound group of amalgamated hordes or clans. In the organic world the result was the formation of tissues, the multiplication of organs, and the integration of the parts thus united into complete organisms. In the social world the result was the formation of what may be properly called social tissues, the multiplication of social organs, and the integration of all the elements thus combined into peoples, states, and nations. The study of social structure properly begins here; but social structure would be wholly unintelligible without a clear idea of both the principle and the materials of social structure. The principle is the interaction of antagonistic forces, and the materials are the primitive hordes and clans brought into existence by the process of social differentiation. We have now to descend from generalities and inquire into the specific character of social integration. A great area has become inhabited by innumerable human groups, but there is no organic connection between them. Each group lays claim to a certain area of territory, but they begin to encroach upon one another. Two groups thus brought into proximity may be, and usually are, utterly unknown to each other. The mutual encroachment is certain to produce hostility. War is the result, and one of the two groups is almost certain to prove the superior warrior and to conquer the other. The first step in the whole process is the conquest of one race by another. This is the beginning of the struggle of races of which we have all heard so much. Most persons regard this struggle as the greatest of all human misfortunes. But the sociologist studies the effects of race-struggle and finds in it the basis of his science. The first effect is the subjugation of one race by another. The second effect is the

establishment of a system of caste, the conquering race assuming the rôle of a superior or noble caste, and the conquered race being relegated to the position of an inferior or ignoble caste. The greater part of the conquered race is enslaved, and the institution of slavery begins here. The slaves are compelled to work, and labor in the economic sense begins here. The enslavement of the producers and the compelling them to work was the only way in which mankind could have been taught to labor, and therefore the whole industrial system of society begins here.

The conquerors parcel out the lands to the leading military chieftains, and the institution of private ownership of land has its origin at this stage. Success in war is attributed to the favor of the gods, and those who pretend to be in communication with the gods are the most favored of men. They are installed in high places and made the recipients of large emoluments. From the condition of sorcerers, soothsayers, and medicine-men they are raised to that of a powerful priesthood. Henceforth they constitute a leisure class, and this is the origin of that most important human institution. Mutual race-hatred results in perpetual uprisings, requiring constant suppression by the military power. This is costly, dangerous, and precarious, and wisdom soon dictates a form of systematic treatment for offenders. Personal regulation gradually gives way to general rules, and these ultimately take the form of laws. Government by law gradually succeeds government by arbitrary military commands. The effect of this is nothing less than the origin of the state. The state is the most important of all human institutions. There is no institution about which so much has been written, and even in our day volumes are yearly appearing vainly endeavoring to explain the origin and nature of the state. They all completely miss the mark, and flounder in a sea of vague and worthless speculation. The state is a spontaneous genetic product, resulting, like all other social structures, from the interaction of antagonistic forces, checking and restraining one another and evolving a great social structure destined to become the condition to all social progress. Under the state there are recognized both rights and duties. So long as the law is not violated there is liberty of action, and the foundations of human freedom are laid.

Another great institution takes its rise at this stage, viz., that of property. With the establishment of the state, with its recognition of rights under the law, it becomes possible, as never before, to enjoy undisturbed any object that has been rightfully acquired. Such an object then becomes property, and belongs to its owner even if not in his immediate possession. He need no longer fear that, unless it is constantly watched and forcibly defended, it

will be wrested from him by others who have no other claim than that of superior strength. The immense sociological importance of this cannot be too strongly emphasized. For a man's possessions need no longer be confined to what he can himself consume or enjoy; they may greatly exceed his wants, or consist of objects for which he has no need, but which are needed by others who have other things that he does want and for which he can exchange them. He can manufacture a single product many thousand times in excess of his needs, and exchange it for a great variety of other objects similarly produced in excess by others. We thus see that the institution of private property was the foundation at once of all trade and business and also of the division of labor. But property was not possible until the state was established, whose most important function was at the outset and still remains the protection of the citizen in his proprietary rights.

With the establishment of the state, or even before, there begins a differentiation of social tissues. The analogy with organic tissues is here particularly clear and useful in helping us to understand the process. All well-informed persons are now familiar with the fact that the tissues of all developed animals consist of an ectoderm, or outer layer, an endoderm, or inner layer, and a mesoderm, or intermediate layer, and that out of one or the other of these fundamental tissues all the organs of the body are formed. Now, the evolution of the metasocial body is exactly parallel to this. The conquering race, or superior class or caste, represents the social ectoderm; the conquered race, or inferior class or caste, represents the social endoderm. The social mesoderm is not so simple, but it is not less real. It is one of the most important consequences of race-amalgamation.

Within the social body, under the régime of law and the state, there is intense activity. Compelled by mutually restraining forces to remain in one place and not fly off on various tangents, the vigorous elements of the new complex society display a corresponding intensity in their inner life. Only a small part of the superior race can hold high places under the state, and the great majority of them are obliged to support themselves by their own efforts. Neither are all the members of the subject race held in bondage; a large percentage remain free, and must of course maintain themselves by some form of useful activity. These two classes are too nearly alike in their social standing to continue long socially and economically independent. It must be remembered that both races have descended from the same original stock, although they do not know it. There is therefore no essential difference in their general character. The superiority by which one was able to conquer the other may have been due to a variety of more

or less accidental causes. It does not render them superior in other respects. The individuals of both races will differ greatly in character and ability, and members of the subject race will often excel those of the dominant race in certain respects. They are all struggling together for subsistence, and it is inevitable that their interests will often be the same. Race-prejudice will thus gradually give way, and in the general industrial strife there is a greater and greater commingling and coöperation. There thus arises a large industrial class made up of these two elements, and this class may be appropriately called the "social mesoderm." This industrial, commercial, or business class is the real life of the society. The ruling class becomes more and more dependent upon it for the supply of the resources of the state, and gradually the members of this class acquire more or less influence and power.

As time goes on, the situation is accepted by all, and race-prejudices give way. The interaction of all classes increases, and a general process of assimilation sets in, tending toward a complete blending of all classes into a single homogeneous group. Inter-marriage among the members of the two races grows more and more frequent, until ultimately nearly or quite all the members of the society have the blood of both races in their veins. The final outcome of it all is the production of a people. The people thus evolved out of heterogeneous elements is different from either of the races producing it. It is a new creation, the social synthesis of the race-struggle, and is as homogeneous in its constitution as was either of its original components.

Only one more step in this process of evolution of social structures is possible on the simple plane on which we have been tracing it, and that is the making of a nation. The new people that have been developed now begin to acquire an attachment, not only for one another as members of the society, but also for the place of their birth and activity. They realize that they are a people and that they have a country, and there arises a love of both which crystallizes into the sentiment that we call patriotism. All are now ready to defend their country against outside powers, and all are filled with what we know as the national sentiment. In a word, out of the prolonged struggle of two primarily antagonistic and hostile races there has at last emerged a single cemented and homogeneous nation.

We thus have as the natural and necessary result of the conquest and subjugation of one primitive group by another no less than fourteen more or less distinct social structures or human institutions. These are in the order in which they are developed: (1) the system of caste; (2) the institution of slavery; (3) labor in the economic sense; (4) the industrial system; (5) landed prop-

perty; (6) the priesthood; (7) a leisure class; (8) government by law; (9) the state; (10) political liberty; (11) property; (12) a business class; (13) a people; (14) a nation.

The first two of these social structures are not now regarded as useful, but they were useful when formed, and, indeed, the essential conditions to all the subsequent ones. The priesthood and the leisure class are now no longer necessary to a high civilization, but they still exist, and under proper limitations they have an important function. All institutions undergo great modifications and some are completely transformed with time.

The case considered is that of the union of two primitive groups which occupied at the outset the same social position, and that the lowest known. It may be called a case of simple social assimilation. That there have been many such cases there is no doubt, but no such could be observed by enlightened man, for the simple reason that no such primitive groups exist, or have existed since there have been enlightened men. This may sound strange when we constantly hear of existing hordes and clans. But I make bold to affirm that none of the hordes or clans now existing are at all primitive. Nay, I go farther and maintain that all hordes and clans, all tribes, and all races are equally old. The lowest race on the earth is as old as the most enlightened nation. There is no escape from this except in the old exploded theological doctrine of special creation. The theory of polygenism is a form of that doctrine applied to human races. To admit it involves the surrender of the whole doctrine of evolution. If man has evolved from a lower prehuman stage, he emerged as man at a given time, and all human races have descended from that one truly primitive type. All human races are therefore equally old. The differences among them are not at all due to the time it has required to reach their present state, because all have had the same time in which to do this. The differences are wholly due to the different conditions under which they have been placed and in conformity with which they have developed.

There has, of course, been a great variety of influences at work in determining the direction and degree of development of the races of men, but there is one element that has had more to do with this than any other, or perhaps than all others combined; that is the element with which we have been dealing, viz., the element of social assimilation. When we realize that all human races are equally old, we can readily see that all cases of simple assimilation, such as the one sketched, must have occurred far back in the early history of man. The period of social differentiation may have been very long. It may have occupied half of the two hundred thousand years that are commonly assigned to man

on the earth. But whatever its length, that period is long past, and the period of social integration has been at least as long. All the cases of simple assimilation had run their course ages before there were any records of any kind, and human history acquaints us only with types of a far higher order.

In other words, the only cases of which we have any actual knowledge are cases of compound social assimilation. Compound assimilation results when peoples or nations that have already been formed in the manner described out of lower social elements again amalgamate on a higher plane and repeat the process. When one perfectly integrated nation conquers and subjugates another, the same steps have to be taken as in the case of simple groups. The struggle is as much more intense as it is higher in the scale of social structure. But the new structures developed through it, although they have the same names and the same general character, become, when formed, more powerful and capable of accomplishing much more. The new society is of a higher grade and a more potent factor in the world. The new state, the new people, the new nation, are on a higher plane, and a long step is taken toward civilization.

But all the nations of which history tells us anything have undergone much more still than two social assimilations. Most of them have undergone many, and represent highly complex structures. With every fresh assimilation they rise in the scale of civilization. What they acquire is greater and greater social efficiency, and the principal differences between races, peoples, and nations are differences in the degree of social efficiency. Not only are the same social structures acquired in the first assimilation greatly increased and strengthened, but a large number of other, more or less derivative, but highly socializing, structures are added. The system of law, which was at first only a sort of police regulation, becomes a great system of jurisprudence. Government, which at first had but one branch, viz., the executive, acquires a judicial and finally a legislative branch. The state becomes a vast systematized organization. Industry, which at the beginning consisted wholly of slave labor under a master, and later included the simplest forms of trade, develops into a system of economic production, exchange, transportation, and general circulation. Property, which primarily meant only oxen, spears, bows and arrows, and primitive agricultural implements, now takes varied forms, the most important being those symbols of property which go by the name of money. Under the protection of the state, wealth becomes possible to a large number who possess the thrift to acquire it, and this takes the form of capital, which is the condition to all industrial progress and national wealth.

The existence of wealth — *i. e.*, of a large number of wealthy citizens — creates another kind of leisure class, and many, freed from the trammels of toil, turn their attention to various higher pursuits. Art and literature arise, and civilizing and refining influences begin. Voluntary organizations of many kinds, all having different objects, are formed. Besides innumerable business combinations and corporations, there spring up associations for mutual aid, for intellectual improvement, for social intercourse, for amusement and pleasure, and also eventually for charitable and benevolent purposes. Educational systems are established, and the study of human history, of art and letters, and finally of nature, is undertaken. The era of science at last opens, invention and discovery are stimulated, and the conquest of nature and the mastery of the world begin.

Every one of these civilizing agencies is a social structure and all of them are the products of the one universal process. They represent the products of that intensive activity which results from the primary clash and conflict of the social forces in the fierce grapple of hostile hordes and clans, and the far fiercer battles of developed nations bent on each other's conquest and subjugation. To see all this one has only to read the history of any of the great nations of the world that are leading the civilization of to-day. Every one is familiar with the history of England, for example. No less than four typical social assimilations have taken place on English soil since the earliest recorded annals of that country began. Think of the animosities and hostilities, the bitter race-hatred, the desperate struggles, the prolonged wars, that characterize the history of England. What has become of all these warring elements? There is no country in the world where patriotism is higher than in England, and it is shared alike by Saxon and Celt, by Scot and Briton. Who now are the Normans that constituted the last conquering race? And do the Saxons, when they can be distinguished, any longer feel the chains that once manacled them? The equilibration is complete, and all class distinctions, at least those arising out of the race-question, have totally disappeared. On the other hand, consider the achievements of England. Contemplate the wonderful social efficiency of that many times amalgamated people. The sociologist cannot shut his eyes to the fact that the social efficiency is mainly due to the repeated amalgamations and to the intensity of the resultant social struggles, developing, molding, and strengthening social structures.

France or Germany would show the same general truth, and those who are equally familiar with their history will find no difficulty in paralleling every step in the process of national development in all these countries. Austria seems to present an exception,

but the only difference is that Austria is now in the midst of a new social assimilation. The equilibration is not yet complete. The Magyar and the Slav are still in the stage of resistance. It is said that, on account of the differences of language, they can never be assimilated. But in England there was the same diversity of language, and the languages of the Romans, of the Normans, of the Saxons, and of the Welsh and Scots had all to undergo a process of mutual concession, of giving and taking, and of ultimate blending, to form the new resultant language. It is not probable that just such a result will be attained in Austria, and no one is probably wise enough to foresee the end; but it seems probable that the time will come at last when all these race-elements will be fully conciliated and a great new race, people, and nation will emerge. The world regards the struggle sympathetically and unanimously echoes the sentiment: *Tu felix Austria nube.*

We know less of the great Asiatic peoples, and still less of the African; but so far as their history is known it is shown to have been one of perpetual war. This means the repeated conquest and subjugation of one race or nation by another, and a long series of social assimilations, all similar to those described. That these countries have not attained the same stage of culture as have those of Europe is due to causes too subtle and obscure to be discussed here, even if I were competent to discuss them; but one truth seems to be growing more and more clear, viz., that the difference is due much less to the native abilities of these peoples than to the external conditions to which they have been subjected. Fifty years ago Japan and China were habitually classed together, and they were regarded as inferior races incapable of any such civilization as that of the Western world. No one so classes them now, and it is all because Japan has resolutely set about adopting Western methods. Should China ever do so, the result would be the same, and it is impossible to calculate what this might be.

But it is not necessary that the two races brought into conflict be of the same degree or order of assimilation. It is equally possible that they be of very different degrees in this respect. Of course, in such cases it is easy to see which will be the conquering race. The race having the greatest social efficiency will easily subdue the other, and the process of assimilation will be somewhat different. The new racial product will differ much less from the conquering race. That race will be prepotent and will virtually absorb the inferior race. If the difference is very great, as where a highly civilized race invades the territory occupied by a race of savages, the latter seems soon to disappear almost altogether, like the North American Indians, and to exert scarcely any influence upon the superior race. It is so in Australasia and in South Africa. But

where there remains a great numerical disproportion of the native race, this latter being somewhat advanced in civilization, as in British India, other complications arise and new problems confront the student. In Mexico, and to a greater or less extent throughout Central and South America, there has been extensive blending of conquering and conquered races, giving rise to still other conditions, and correspondingly varying the character of the resultant social structures.

This is not the place to dilate upon the remote effects of this vast process of universal social integration, but I cannot leave the subject without repeating what I have said before: that if we could but peer far enough into the great future, we should see this planet of ours ultimately peopled with a single homogeneous and completely assimilated race of men — the human race — in the composition of which could be detected all the great commanding qualities of every one of its racial components. And I will also add that to the subsequent duration of this final race on the earth there are no assignable limits.

But we are considering social structure and not social integration, although these are intimately bound up together. We have seen how social structures are formed. The spontaneous products of a great cosmical law, they could not be other than thoroughly organized, firm, compact, and durable mechanisms, comparable to organic structures — tissues, organs, organisms. This is the most important lesson taught by the science of sociology. If all the world could learn it, the greater part of all political and social failures would be prevented. It would dispel at one blow all the false notions so widely current relative to the alteration, abolition, or overthrow of any human institution. As human institutions are the products of evolution, they cannot be destroyed, and the only way they can be modified is through this same process of evolution. Universal acquaintance with the causes, the laws, and the natural history of social structures, and with their consequent durability, permanence, and indestructibility, would produce a complete change in all the prevailing ideas of reform, and the superficial reformers, however well-meaning, would forthwith abandon their chimerical schemes, and set about studying the science of society with a view to the adoption of legitimate means for the direction of the course of social evolution toward the real and possible modification and perfecting of social structures. For structures are easily modified by appropriate methods. They are of themselves always undergoing changes. It is in this that social progress wholly consists. But the integrity of the structures must not be disturbed. They must remain intact and be permitted, or even caused, to change in the desired direction, and to be ultimately transformed into the

ideal human institutions that a progressive age demands. A condition of social statics may thus be converted into one of social dynamics. All social structures taken together constitute the social order. The problem is to inaugurate a condition of social progress. This cannot be done by disturbing the social order. Order is the condition to progress, and progress consists in setting up dynamic activities in the social structures themselves. A structure represents a state of equilibrium, but it is never a perfect equilibrium, and the conversion of this partial equilibrium into a moving equilibrium, provided it moves in the right direction, is social progress.

SECTION B — SOCIAL PSYCHOLOGY

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(Hall 15, September 23, 10 a. m.)

CHAIRMAN: PROFESSOR CHARLES A. ELLWOOD, University of Missouri.

SPEAKERS: PROFESSOR WM. I. THOMAS, University of Chicago.

PROFESSOR EDWARD A. ROSS, University of Nebraska.

SECRETARY: PROFESSOR E. L. HAYES, Miami University.

THE Chairman of the Section of Social Psychology, was Professor Charles A. Ellwood, of the University of Missouri, who introduced the speakers of this Section with the following remarks:

“Ladies and gentlemen: Those of us who are interested in the development of this most important part of sociology may congratulate ourselves that an entire section meeting has been given to it upon the programme of this Congress. It is safe to say that if this Congress had been held ten years earlier no such recognition would have been accorded to social psychology. We may certainly congratulate ourselves, therefore, upon the progress of our science.

“I wish to call attention to the fact that this section on social psychology is placed under sociology, and not under psychology. This means of course that the officers of this Congress thought that in any working classification of the sciences social psychology must be considered as a section of sociology rather than as a section of psychology. Before introducing the speakers, I would like therefore to raise the question whether the name ‘social psychology’ is a happy one. I would much prefer the name ‘psychological sociology.’ I suppose there is not much in a name, but I feel that the term ‘social psychology’ is misleading, in that it fails even to suggest that the subject covers nearly three fourths of all that is discussed under the head of ‘general sociology.’ But I must not enter further upon this discussion, as the question raised will doubtless be dealt with adequately by the speakers of this Section.

“I have now the pleasure of introducing the first speaker, Professor W. I. Thomas, of the University of Chicago, who will speak on ‘The Province of Social Psychology.’”

THE PROVINCE OF SOCIAL PSYCHOLOGY

BY WILLIAM I. THOMAS

[William I. Thomas, Ph.D., Associate Professor of Sociology, University of Chicago. A.B. University of Tennessee, 1884; A.M. *ibid.* 1885; Instructor in English and Modern Languages, *ibid.* 1886-87; Adjunct Professor of English and Modern Languages, *ibid.* 1887-88; Student in Berlin and Göttingen, 1888-89; Professor of English, Oberlin College, 1889-94; Fellow in Sociology, University of Chicago, 1893-94; Professor of Sociology, Oberlin College, 1894-95; Assistant in Sociology, the University of Chicago, 1894-95; Instructor in Sociology, *ibid.* 1895-96; Ph.D. *ibid.* 1896; Assistant Professor, *ibid.* 1896-1900.]

THE conception of a social mind set forth in detail by Lazarus and Steinthal in the first issue of the *Zeitschrift für Völkerpsychologie* forty-four years ago, and the conception of society as an organism elaborated in the same year by Herbert Spencer in his essay on *The Social Organism*, have given rise to much discussion as to whether there is a social mind or a social organism in any other than a figurative sense. Some of this discussion has been fantastic and futile, and there is at present apparently a general tendency to agree that the social organism is nothing more than a useful analogy, and that there is no social mind and no social psychology apart from individual mind and individual psychology. At the same time, the development of psychology and sociology during the past twenty years has made it plain that the individual mind cannot be understood apart from the social environment, and that a society cannot be understood apart from the operation of individual mind; and there has grown up, or there is growing up, a social psychology whose study is the individual mental processes in so far as they are conditioned by society, and the social processes in so far as they are conditioned by states of consciousness. From this standpoint social psychology may make either the individual or society the object of attention at a given moment. Ethnology, history, and the phenomena of collective life in general are its subject-matter when they are viewed from the psychological standpoint,—the standpoint of attention, interest, habit, cognition, emotion, will, etc.,—and the individual becomes its subject-matter when we examine the effect on his consciousness of conditions of consciousness as found in other individuals or in society at large. Otherwise stated, the province of social psychology is the examination of the interaction of individual consciousness and society, and the effect of the interaction on individual consciousness on the one hand and on society on the other. If, instead of claiming for social psychology a separate class of phenomena, we accept this view, and regard it as an exten-

sion of individual psychology to the phenomena of collective life, we have immediately a set of important problems not included in the programmes of other sciences.

Prominent among the problems which must engage the attention of the social psychologist is the genesis of states of consciousness in the social group and their modifying influence on the habits of the group. In group- as in individual-life the object of an elaborate structural organization is the control of the environment, and this is secured through the medium of attention. Through attention certain habits are set up answering to the needs of individual- and group-life. When the habit is running smoothly, or as long as it is adequate, the attention is relaxed; but when new conditions and emergencies arise, the attention and the emotions are called into play, the old habit is broken up, and a new one is formed which provides for the disturbing condition. In the reaccommodation there is a modification and an enlargement of consciousness. Since it is through crisis or shock that the attention is aroused and explores the situation with a view to reconstructing modes of activity, the crisis has an important relation to the development of the individual or of society.

A study of society on the psychological side involves, therefore, an examination of the crises or incidents in group-life which interrupt the flow of habit and give rise to changed conditions of consciousness and practice. Prominent among the crises of this nature are famine, pestilence, defeat in battle, floods, and drought, and in general sudden and catastrophic occurrences which are new or not adequately provided against; and in the process of gaining control again after the disturbance are seen invention, coöperation, sympathy, association in large numbers and on a different basis, resort to special individuals who have or claim to have special power in emergencies either as leaders or as medicine-men. Another set of incidents, regularly recurrent and anticipated indeed, but of a nature calling for recurrent attention, are birth, puberty, and death. The custom, ceremonial, and myth growing up about these incidents in group-life, and the degree to which special functionaries have become associated with them, indicate that they have had a powerful influence on the attentive processes and the mental life of the group. Shadows, dreams, swooning, intoxication, and epilepsy represent another class of phenomena arresting the attention and causing reflection and readjustment, together with the development of ideas of causation and of a special class of functionaries who act as interpreters of the phenomena. Still another set of crises arises in connection with the conflict of interest between individuals, and between the individual- and group-habits. Theft, assault, magical practice, and any and all invasion

of the rights of others are the occasion of the formulation of legal and moral practice, and of the emergence of a class of persons specially skilled in administering the practice.

The mediation of crises of this nature leads, on the one hand, to the development of morality, religion, custom, myth, invention, art, and, on the other hand, to medicine-man, priest, lawgiver, judge, physician, artist, philosopher, teacher, and investigator. It leads also to the formation of special classes and castes, to the concentration of knowledge, wealth, power, and technique in the hands of particular classes and persons, and to the use of special opportunity on the part of the few to manipulate and exploit the many. Viewed merely as incidents, both the crises and the practices growing up about them are a part of the history of institutions, but when viewed from the standpoint of attention and habit, they are subject-matter of social psychology.

It is in relation also to crisis, or the disturbance of habit, that invention, imitation, and suggestion — factors of the greatest importance in social evolution — may be studied to the best advantage. The crisis discloses the inadequacy of the habit, the invention is the mental side of the readjustment, imitation is the mode of reaction to the new condition or copy provided through invention, and suggestion is the means by which the copies are disseminated. Language is so rich a mine for the social psychologist, and so important in the study of suggestion and imitation, because it is not only a register of the consciousness of the race, but it is, more than any other medium, the means by which suggestion is operative, and by which the race-copies are handed on from generation to generation. For this reason all culture and all the history of culture may be said to be implicit in language.

Another incident of profound importance to the state of consciousness of the group is the emergence of a great personality. The man of genius is a biological freak, whose appearance cannot be anticipated or predetermined. All that we can say is that a certain number of individuals characterized by unusual artistic or inventive faculty, great courage, will, and capacity for organization, or unusual suggestibility in respect to religious and philosophical questions do occasionally appear in every group, and that they powerfully influence the life-direction and the consciousness of their groups. Moses, Mohammed, Confucius, Christ, Aristotle, Peter the Great, Newton, Darwin, Shakespeare have left ineffaceable impressions on the national life, and on the mental states of individuals as well. The fact that a school of thinkers at the present day grows up about a philosopher, or that a religious teacher may gather about him a group of fanatically faithful adherents, is a repetition of a principle of imitation which appar-

ently has been in force since the beginning of associated life, and which in the history of all groups has tended to direct the thought and activity of the multitude into fixed channels. On the principle of Columbus's egg, one leads off and the others follow. The Central Australian *oknirabata* is as influential in his smaller group as Aristotle in a larger until the advent of the white man breaks up his influence. The Chinese are to-day carrying out principles of conduct inculcated by Confucius and Mencius, no crisis of sufficient importance having intervened to break up the old habits and establish new ones. The manner in which copies for belief and practice are set by the medicine-man, the priest, the political leader, the thinker, the agitator, the artist, and, in general, by the uncommon personality, as well as the more spontaneous manifestations of suggestion and hypnotism in public opinion and mob action, are to be studied from the standpoint both of individual- and of group-consciousness.

Still another incident of importance to the consciousness of a group is contact with outsiders. The Japanese are a most instructive example of the effect of foreign copies on a people sufficiently advanced in its own thought to make intelligent use of them. From time immemorial the Arabs have penetrated Africa in connection with trade and slavery, and if it could be written, the history of their influence on the native population would be most interesting. Similarly the contact of black and white in America is a subject not at all worked out from the mental standpoint, and the American occupation of the Philippines is a condition which may be watched with equal interest. It is apparent already that a very low state of society is not prepared to accept bodily the standpoint and practice of a very high; the shock is too great, and the lower race cannot adjust. An important question in this connection is the rate at which a lower race may receive suggestion from a higher without being disorganized. Apparently the negro in America has not been able to adjust himself to white standards, while in Africa he has improved in contact with Arab influence. The Filipinos, on the other hand, are apparently able to reaccommodate after contact with the whites, and change their mental habits, but it remains an interesting question whether the Japanese are not more fit than we to put them in the way of advancement.

The psychology of social organization, taken from the standpoint of origin, is one of the most important questions with which the social psychologist has to do, and is also best approached from the standpoint of crisis. The advantage and necessity of living together in large numbers are apparent. But association in large numbers calls for inhibitions and habits not demanded in the individualistic state; and through the stress and strain of readjust-

ment and the formation of habits suitable to social life, steps are taken in the development of consciousness as well as of institutions. The maternal system of control, and the steps by which filiation through descent as a basis of association gives way to association based on common activities and interests and the occupation of a common territory; the psychology of the blood-feud, its weakness as an agent of control, the steps in its break-down, and the substitution of control based on law; blood-brotherhood and tribal marks as signs of community of interest; totemism as an agent of control; initiatory ceremonies as an attempt to educate the young in the traditions of the tribe; tabu and fetishism as police agencies; secret societies and their influence in bringing about solidarity; property and its influence on association and habit; popular assemblies among the natural races and their influence in promoting association; offense and punishment, particularly the consideration of why an act is offensive and the process by which a punishment is selected to fit the offense — these are materials furnishing a concrete approach to a psychological study of association. In the play of attention about these practices we are able to trace steps in the development of the consciousness of the race.

Ethnology and the kindred sciences have already established the fact that human nature, the external world, and the fundamental needs of life are everywhere much alike, and that there is, roughly speaking, a parallelism of development in all groups, or a tendency in every group which advances at all to take the same steps as those taken by other groups. Such phenomena as spirit-belief and accompanying ecclesiastical institutions, blood-vengeance preceding juridical institutions, a maternal system preceding patriarchal control, ecclesiastical and political despotism preceding democracy, and artistic, inventive, and mythical products of the same general ground-pattern, show a general law of uniformity in progress; and it is one of the tasks of social psychology to work out from the standpoint of habit, attention, and stimulation what conditions have contributed to make differences in the progress of different groups; whether steps in progress, if taken at all, are invariably taken in the same order by all groups; and why stimulation or opportunity is so lacking in some groups that old habits are not broken up at all, and the groups remain in consequence non-progressive. The study of parallelism in development not only throws light on social development, but the fact of a common possession of language, myth, religion, number-, time-, and space-conceptions, political and legal organization under conditions where the possibility of borrowing is precluded, indicates that the same general type of mind is a possession of all races, both

low and high, and has an important bearing on educational theory and the race-questions.

Another extension of individual psychology to the region of social phenomena lies in the comparison of the states of consciousness of different races, classes, and social epochs, with a view to determining what mental differences exist, and to what extent they are due to biological as over against social causes. This involves, of course, a comparative study of mental traits.

The study of memory, sense-perceptions, and power of attention among different races and classes will assist in determining the degree to which differences of this character are innate, on the one hand, or due to the habitual direction of the attention and consequent practice, on the other. The study of mental traits must always be made with reference to the condition of activities prevailing, and the study is consequently both sociological and psychological.

The degree to which the power of abstraction is developed in different groups is another fruitful line of interest. The prevailing opinion is that the lower races are weak in the power of abstraction, and certainly their languages are poor in abstract terms. But a people whose activities are simple cannot have a complex mental life. Abstraction is much used in a group only when deliberative as over against perceptual activities engage the attention, and where the manipulation of complex activities involves numerous steps between the stimulus and the response, and a distinction between the general and the particular. The life of the savage and of the lower classes is of an immediate kind, with little mental play between the stimulation and the act, and consequently little occasion to employ abstraction. All races do possess language, however, which involves the use of abstraction; all have systems of number, time, and space; many of them have a rich repertory of proverbs; and all show logical power. The question which social psychology has to work out is to what degree apparent lack of power of abstraction is due to lack of activities and stimulations which force the attention to employ abstract processes and give it practice in handling series. Deficiency in logical power among groups in lower stages of culture is also obviously largely dependent on the fact that the general body of knowledge and tradition, on which logical discussion depends, is deficient. So far as this view holds, it means that what have sometimes been regarded as biological differences separating social groups are not really so, and that characteristic expressions of mind are dependent on social environment.

The degree to which the power of inhibition is developed in the lower races as compared with the higher leads again to the employment of psychological methods and ethnological materials. The

control of the individual over himself and of society over him depends largely on this faculty, and it is often alleged by psychologists and students of society that the inferior position of the lower races is due in part to feeble powers of inhibition, and consequent lack of ability to sacrifice an immediate satisfaction for a greater future one. An examination of the facts, however, shows that the savage exercises definite and powerful restraints over his impulses, but that these restraints do not correspond to our own. In connection with tabu, totemism, fetish, and ceremonial among the lower races, in the hunger voluntarily submitted to in the presence of food, as well as stoicism under physical hardships and torture, we have inhibitions quite as striking as any exhibited in modern society or in history. The occasions of inhibition depend on the point of view, the traditions, the peculiar life-conditions of the society. In the lower races the conditions do not correspond with our own, but it is doubtful whether the civilized make more use of inhibition in the manipulation of society than the savage, or whether the white race possesses superior power in this respect. The point, at any rate, is to determine the effect in a given group of inhibition on activities, and the reaction of the social life on the inhibitive processes of the individual.

The influence of temperament among different races in determining the directions of attention and interest is also an important social-psychological field. There is much reason to think that temperament, as determining what classes of stimulations are effective, is quite as important as brain-capacity in fixing the characteristic lines of development followed by a group, and that there is more unlikeness on the temperamental than on the mental side between both individuals and races. From this standpoint the social psychologist studies the moods and organic appetites of the lower races — the attitude toward pain and pleasure, vanity, fear, anger, ornamentation, endurance, curiosity, apathy, sexual appetite, etc. It is not impossible, for example, that the arrested development of the Negro at the period of puberty is due to the obsession of the mind by sexual feeling at this time, rather than to the closing of the sutures of the cranium.

Similar to the question of temperament in the individuals of a group is that of the degree to which the affective processes, as compared with the cognitive, are the medium of the stimulations promoting social change. Cognition is of less importance than emotion in some activities, notably those connected with art and reproduction, and it is even true that emotion and cognition are in certain conditions incompatible. In this general region lie such questions as the effect of rhythm on social life, particularly in bringing about coöperation in hunting, war, and work; the psychology of work

and play; the bearing on social activity of ornament, dancing, painting, sculpture, poetry, music, and intoxicants; and to what extent an organic attitude of sensitiveness to the opinion of others (an attitude of mind essential to the control of the individual by society) had its origin in courtship and to what extent in the food-activities.

A comparison of the educational systems of the lower and higher stages of culture will assist the social psychologist in determining to what extent the consciousness of a group and the group-peculiarities on the mental side are organic, and to what extent they are bound up with the nature of the knowledge and tradition transmitted from one generation to another. There cannot be a high state of mind in a society where the state of knowledge is low, and if a group has not accumulated a body of scientific knowledge, through specialized attention and specialized occupation, it cannot pass knowledge on. And doubtless the low mental condition of some groups is not due to lack of native intelligence, but to lack of the proper copies for imitation. The Chinese, for example, are a race of great mental power, but they have no logic, no mathematics to speak of, no science, no history in the scientific sense, no knowledge worth the name — only precedent, and rule, and precept. It is therefore unthinkable that the Chinese individual should be well educated or intelligent in the Western sense, however assiduously he attends his school, since there is no organized body of knowledge which he can get possession of. At the same time, the member of this society may be able to master any knowledge in the possession of any group, if given access to it. In a study of this character we have therefore an opportunity to distinguish between the mental state of the individual and the state of knowledge in the group. Neither the Eastern question, nor the Negro question, nor questions of crime and social reform, nor of pedagogy, can be safely approached unless we make this distinction between the mind of the individual and the state of culture in his group.

Perhaps the most urgent of all demands on social psychology at the present moment comes from psychology and pedagogy, and is for a more definite and scientific statement on the question of epochs in social development, and the relation between stages of development in the consciousness of the individual and epochs of culture. There is an anthropological theory that there have been more or less clearly marked stages of social development, characterized by equally marked activities, and mental conditions corresponding with the types of activity prevalent in the different epochs. Psychology assumes further that there is a parallelism between the mental growth of the child and these culture-epochs — that the child passes in a recapitulatory way through phases

corresponding with the epochs in race-development. Pedagogy is actually operating on the assumption of such a parallelism. It may well be, however, that the whole assumption is a misapprehension. There is another view that the brain like the body of man was made up in the earliest times on a successful principle, and that it has not changed materially since, showing merely a capacity to manage new problems as they have arisen in the outside world, using motor, perceptual, and coördinative processes more in the earlier, and abstract processes more in the later, stages of development. If this view is correct, the brain of the child recapitulates the brain of the race only in the sense that the accumulated knowledge and standpoint of the race are so presented to him, and with such urgency and system that habits are broken up and reformed rapidly, and the mind transformed, in no biological sense, but only in the sense that the attention and the content of the mind are made correspondent with the world as it is at present. Social psychology must coöperate with psychology and anthropology in determining the principles underlying mental growth in the race and in the individual before the science of education can make any sure progress.

The view of the province of social psychology here presented has at least the merit of suggesting a field of operations not occupied by other sciences. It is not claimed that the materials used are entirely new, nor that the problems arising here may not arise in connection with other sciences also. But, after all, there is but one reality, and a new science never represented anything more than a new direction of the attention. The legitimacy of viewing the same materials from different standpoints can hardly be questioned when we consider that the human brain is studied by psychology, anthropology, physiology, anatomy, pathology, and embryology, and that experience has shown this differentiation of attention in the study of the brain to be precisely the method yielding the best results. It is, indeed, the scientific procedure corresponding with the division of labor in the industrial pursuits and in the professions; and the differentiation of a social psychology from the sciences of psychology, sociology, anthropology, ethnology, folk-lore, and history, with a class of specialists giving their attention to the extension of psychology to the region of social phenomena, will yield, we may hope, results supplementary to those secured by these sciences, and of importance to the study of life and society.

THE PRESENT PROBLEMS OF SOCIAL PSYCHOLOGY

BY EDWARD ALSWORTH ROSS

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MANY of the scholars who in their sectional meetings are at this moment running over the "present problems" of their respective sciences are in the enviable position of having only to point out certain stumps, bog-holes, thickets, and neglected fringes that mar the appearance of their well-tilled fields. It is, however, my unhappy duty, in reporting upon the problems besetting the pioneers of social psychology, to make what amounts to a resurvey of the territory allotted to my science. So much of it is unsubdued wilderness, so little is plowed field, that a review of the problems yet to be solved requires me to run afresh the boundary-lines, to drive the corner stakes, to cruise the inclosed area, and to declare the whole domain, with the exception of certain promising clearings which I shall take care to point out, open to entry and settlement.

Human psychology may from one point of view be divided into general and special, the former dealing with that which is common to all minds, the latter with the *differentiae* which mark off one category of minds from another. General psychology may in turn be divided into individual and inter-individual, the former concerned with mind as acted upon by things and experiences, the latter with mind as acted upon by other minds. The latter, embracing as it does every possible mode of association of human beings, belongs to social psychology. Special psychology likewise falls naturally into two sections, the one determining the mental traits of anthropic varieties, such as races, sexes, ages, temperaments, and types; the other, of societal varieties, such as nationalities, classes, culture grades, etc. While there are some who would make social psychology coextensive with inter-individual psychology and confine it to studying the action of mind on mind, I believe it ought to include the differential psychology

of people reared in different civilizations, social formations, or family types, molded by unlike environments, occupations, and civil conditions. It should inquire, not only how one person is affected by another, but also how he is affected by variations in work, reward, mode of life, or tradition. If these national and class types are ignored by social psychology, I should like to know what branch of science will attend to them.

Inter-individual psychology has to deal with two sets of problems — those connected with personal relationships and those connected with social groupings. The former call for a description of all the types of influence that one person can exert upon another, and an exposition of the content of each of the chief relations in which two human beings can stand to one another. What precisely takes place when one person impresses or imitates, dominates or obeys, teaches or believes, fascinates or antagonizes another? In view of the importance the suggestion theory attaches to the hero, the apostle, and the prophet as initiators of historic movements, these inquiries may mean much for social science. Again, what is implied in such relations as friendship, dependence, discipleship, clientage, pupilage, vassalage, agency, etc.?

The field of personal interactions and relations has been explored, and it cannot be said to offer us at the moment any serious problems. It would, in fact, not be difficult to glean from the great imaginative writings, diaries, and autobiographies of the world an anthology of selections that would set forth with all the eloquence of genius the possible spiritual attitudes that persons may assume with respect to one another.

What we lack, however, is a clear notion of how such simple inter-individual processes give rise to such massive and diffused products as languages, myths, customs, proverbs, and folk-lore. These were certainly not conceived and imposed by some superman, nor are they the outcome of organized, associated effort. To wave them aside as "collective products" is to dodge the question. The building, diffusion, and transmission of languages, myths, and the like appear to depend, not on mass-action of any kind, but on innumerable molecular occurrences too petty to challenge general attention. Tarde's resolution of these processes into the repetition and in-and-in weaving of two elementary phenomena, the novel combination of ideas in the individual mind — invention — and the action of mind on mind — suggestion-imitation — is the only plausible explanation that has ever been offered, and it doubtless leads a long way toward the solution of the problem.

No chapters in sociology will be so attractive as those which treat of human groupings. It took men a long time to discover the

atmosphere, because everything else is seen through that medium. So it took a long time to discover the existence of subjective environments, because the social life of man was seen through the refracting prejudices inspired by some one of these environments. If at last the thinker is coming to appreciate the lordly rôle of social groupings, it is because the fuller accounts of man in space — ethnology — and in time — history — afford so broad a basis for comparison that he can now lift himself above the narrow horizon of his date and place.

The union of men concerns us here, not because they flourish through their coöperation, but because their natures are correspondingly modified. The principles of organization, indeed, interest the social morphologist, but so long as associates remain quite self-centred, and cold-bloodedly look upon their society as a mere piece of mechanism helpful in the gaining of their private ends, there is nothing about their union to challenge the social psychologist. The fact is, however, that society reacts upon, transforms, even socializes its members. Properties appear which the elements in the beginning did not possess. It can be established, for instance, that the intellectual and moral traits of any group-unit depend not only upon the original characters of the units, but also upon two other things — upon their mode of combination — a morphological fact — and their manner of interaction — a psychological fact. The true community at once enlarges and imprisons minds. The individual ceases to look upon his fellow coöperators as tools, his union with them as means to an end. A consciousness of his group seizes upon him, and, whether we regard this striking obsession as a monstrous soul-parasite or as a noble graft upon an inferior stock, there is no question that we are in the presence of a super-individual phenomenon. The coincident ideas men have of their group become a spiritual structure, the group-individuality, which trenches upon, even overshadows and well-nigh supplants, their personal individuality.

The problem of social groupings is distinct from that of personal relations. Although it is inter-individual action that extends through a population a plane of agreement, such as a common speech, religion, or culture, — a plane which, to be sure, often serves as a convenient platform on which to rear some fabric of collective life, — it does not follow that a group-unit is built up out of nothing but personal ties, that the bond between fellow members must be some one of the relations that may be established between two individuals. In that case a society, however complex and stable, would be resolvable into couples, each exemplifying some type of reciprocal influence that can be observed between man and man. No doubt there is much social tissue where people are webbed

together by spiritual threads stretching from person to person. In the higher social formations, however, people do not cohere altogether in this simple way. In the personal relationship the poles of thought are myself and my idea of the other person. But in the relation of compatriots, or fellow sectaries, or co-conspirators there comes first the thought of the ideal, leader, dynasty, territory, possession, organ, or symbol that serves as keystone locking the social arch, and then the thought of the fellow member in the same attitude to it that I am. Recognition of this identity of relation establishes between us a bond of sympathy. The vitality and strength of an active permanent group consists, then, not so much in direct attachments among the members as in the attachment of all to something which serves to mark off that body of persons from the rest of the world.

The subjective aspect of human groupings has of late years been taken in hand by what is known as collective psychology, and some really beautiful studies have been made of the crowd, the party, the sect, the public, and the criminal band. They have already done us the great service of showing that there is more than one species of human association, and thereby refuting the pointless antithesis of "individual, society; society, individual," the tiresome iteration of which well-nigh discredited our young science. These studies have, however, been random shots and show no co-ordinating idea. Too often the investigator imagines the particular grouping he analyzes is the pattern of all association. The first duty, then, is to put an end to this attempt to unlock all doors with one key, by classifying social groupings into *genera* and *species*. Once they are thrown into classes and subclasses according to their psychic characteristics, we shall know just how much ground there is to cover. The next task is so to test and graduate them as to reveal the principal degrees of socialization intervening between the absolute individual and the completest group ego. The octave of stages of collective individuality seems to be something like this:

- (1) Those of a certain category, finding a greater mental agreement with one another than with other persons, seek out, associate with, and aid one another. Here a diffused sociality exists, but no group ego.

- (2) They become conscious of their spiritual resemblances, and so begin to think of themselves as a group apart.

- (3) In case their mental community extends to certain common purposes, they spontaneously coördinate their like efforts for the realization of these purposes. Such coöperation implies a higher degree of sympathy and comprehension.

- (4) They spontaneously coördinate unlike efforts for the realiza-

tion of their common purposes. Such division of labor favors a still higher degree of understanding and mutual confidence.

(5) Directive organs are created to secure coördination of efforts. The concrete embodiment of collective aims in one man, or set of men, objectifies the group, and assists the members to a clearer consciousness of their unity.

(6) The sympathy among the *socii* is such that they restrain the members of the community from aggression upon one another. Out of these spontaneous activities develop, first, juristic rules, and, later, organs of control to enforce these rules.

(7) Organs are instituted to promote a completer socialization of the members of the group. By means of festivals, public worship, authoritative doctrines, education, and the like, it is sought to realize in all, not merely specific sentiments, but a certain ideal of life.

Whatever the intermediate shadings, these seem to be the primary colors in the moral spectrum that leads from personal ego to collective ego, from atomism to a corporate consciousness that makes men feel they exist solely for their tribe, state, church, or order; and willing not only to *die*, but, what is more, to *live* for it. Now, after the social psychologist has determined the noteworthy levels in the emergence of a group-individuality, and has set forth their distinguishing characteristics, the yet more difficult task presents itself of ascertaining *the causes and conditions* of each of these phases of group-evolution. Some of these factors will be morphological, pertaining to the constitution and form of the group. For example, are the persons in the group few or many, alike or dissimilar, equal or graded, assembled or dispersed, assembled by chance or by appointment? Do the members know or meet with one another? Are their relations direct or chiefly indirect? Is their association casual or intentional, open or close, temporary or permanent, public or secret, for general ends or for a specific end? How do executive centres arise? Are they simple or compound? Are the powers-holders movable or irremovable, absolute or responsible, chosen for a term or for life, limited or unlimited in their powers?

The make-up of the group is nevertheless not the only thing that determines what stage of unity it shall reach. How definite are its guiding ideas or ideals? How important are the purposes the group undertakes to realize? Is there any other way of realizing them than by collective action? What sacrifices are required? How much energy is lost through friction? To what extent does organization chafe the organized? How far is socialization resisted by influences that fortify personal individuality? How far is it qualified by a dominant society? Is it limited by rival groupings, dividing

the allegiance of its members? How complete is the assimilation possible among them? How does time contribute to the triumph of the corporate self? Upon these and upon other factors, of which we have as yet not even an inkling, depends the degree of socialization. How thick is the darkness that shrouds this process we realize, as we stand amazed before the manifestations by the Japanese of a national consciousness of an unprecedented intensity. The systematic reliance upon voluntary immolation is something new in warfare, and no doubt ere long the envious Occidental statesmen and war-lords will be inciting social psychologists to discover the conditions in Japanese national life that generate a spirit of self-sacrifice so unexampled.

Let no one interpose at this point that the search for specific factors, that is to say, the quest for causal laws, is vain because the human will is not law-abiding. It is precisely in the mass-functions of conscious individuals that regularities declare themselves and may be formulated. In dealing with the behavior of numbers, the psychologist is not restricted to the humble duties of classification and description, but may with full right aspire to the noble office of discovering causes.

The discriminating of levels in the emergence of a group-individuality will reveal all possible encroachments of the collective self upon the personal self, all the possible proportions between corporate feeling and private interest. But can this series of levels be run through by any one group? If so, we could virtually plot the life-curve of a group from birth to death, foretell its development from stage to stage until, after it passed its zenith, it is absorbed, or breaks up into other groups, or gradually disintegrates and allows the erstwhile submerged personal individualities to reappear. The idea is attractive, but illusory. There are probably a number of lines along which groups evolve. For example, a body of eccentric co-religionists, hated and persecuted, may grow more and more intimate, fanatical, and exclusive, until they become "a peculiar people," keeping to themselves and sinking their entire lives in the life of the sect. Active groups, on the other hand, move in the direction of *organization*. Those who coöperate on behalf of some vital common interest may differentiate organ after organ, to serve as bearers of the common will and centres of co-ordination. Again, the community may move along the line of *control*, more and more subjecting private opinion and conduct to general opinion, and secreting morality and law as binding material. If my surmise be correct, we are called upon to trace these diverging lines of group-development, and to discriminate the forces at work in each of these evolutions.

Lest I be reproached for bounding the field of collective psych-

ology rather than pointing out the particular problems it ought to attack, let me state some of the concrete questions that are puzzling me to-day.

Which architect is the chief builder of group-units, Resemblance between the units or Community of Interest? Does awareness of resemblance inspire sympathies which dispose men to unite their efforts in the joint assertion of common interests which were there all the time, but for which they would not consent to coöperate? Or, does some grave posture of affairs, which establishes among men a community of interest, compel them to coöperate; and does their gratitude to one another for these services of mutual aid inspire sympathies which perpetuate the union after the occasion for it has passed away? In the one case men cleave to their kind and shun opposites; in the other case they seek helpers and shun competitors. The one emphasizes *ideas*, the other *material interests*, as source of the sentiments which unite or divide men. It may be that the latter hypothesis holds for political association, while the former holds for cultural association. Moreover, it may be that one type prevails in the impulsive stage of human development, while the other type tends to prevail in the rational stage.

Granting that awareness of resemblances and differences determines the attitudes of persons toward one another, what is the relative importance of the various elements in which people may resemble or differ? As regards physique, the thorough mix-up of cephalic races suggests that head-form is insignificant. Color, on the other hand, is an outstanding trait, and color-contrast is almost always a hindrance to social feeling and a bar to intermarriage. In ancient India, as in our South, color seems to have been the foundation of caste. The shock which a human being experiences on beholding a face of an unfamiliar hue is accentuated as soon as color-contrast becomes indelibly associated with mental, moral, and social differences. Each race, moreover, works out its ideal of personal beauty on the basis of its distinctive traits, and the individuals of another race are apt to strike it as ugly and repulsive.

Some light on the problem is got by noting what points of difference are emphasized when men are coining insulting epithets to hurl at their enemies. With the ruder man personal appearance and habits count for much. One thinks of his foes as "niggers," "greasers," "roundheads," "fuzzy-wuzzies," "red-necks," "pale-faces," "red-haired devils," "brown monkeys," "redskins," "uncircumcised," "dagoes," "frog-eaters," "rat-eaters," etc. Somewhat higher is the type that thinks of his enemy as a "parley-voo," "goddam," "mick," "heathen," "infidel," "heretic," or

"papist." Difference in speech is a serious bar to sympathy, for at first another's speech always sounds to us like the gibberish of a chattering ape. The higher type of man is struck by cultural differences only, and detests those who are "savage," "barbarous," or "benighted."

It would seem that the higher the plane of culture, the more men are affected by agreement or difference in mental content. Among the contents of the mind, religious beliefs are more attended to than general ideas, and the ideals of life than religious beliefs. The discovery of agreement in feeling is more socializing than intellectual agreement. The common enthusiasm for a symbol, or a common love for a chief or dynasty, is of marked socializing value. Unlike persons or groups draw together in fellowship if they are embraced in the same envy or hatred by a third party. Realizing that outsiders think of them as a group tends to form persons into a group. The perception of a common purpose gradually inspires sympathy, and thus are socialized those who are physically different, but who nevertheless have a community of interest.

Still, it is not entirely clear under what conditions those who have a vital common interest to promote will feel and act together. We now understand fairly well the circumstances that favor or oppose the rise of a group-individuality in local communities, provinces, sections, and nations. But the emergence of an individuality in interpenetrating socio-economic classes will not be clear until certain neglected factors are brought into consideration. How is the attitude of a man toward the rest of his class affected by the fact that socio-economic classes are in a hierarchy, and individuals are constantly escaping from one class into a higher? Does not the secret hope of rising prompt many a man to identify himself in imagination with the class he hopes to belong to rather than the class he actually belongs to? Are not the conflicts that, in view of their clear oppositions of interest, one would expect to break out between commoners and nobles, between peasants and bourgeoisie, between workingmen and employers, frequently averted because the natural leaders and molders of opinion among the workingmen hope to become capitalists, the peasants expect to see their sons in the professions, the rich commoners trust to work themselves or their families into the peerage? If this surmise be correct, the decomposition of the national society into hostile classes need not ensue when the decline of national antagonism leaves in high relief the acute differentiation of the population in respect to possessions and economic interests. It may be that, besides the breaking-up of population into a social spectrum, there is needed the further condition that the ascent

from the red toward the violet end of this social spectrum shall be too difficult and rare to tempt the élite of a lower grade to renounce its present class-interest in favor of a higher class it hopes at last to enter.

With the growth of the social mind in extent and comprehension one cannot help wondering what will be the fate of personal individuality. Will there be more room for spontaneity and choice, or is the individual doomed to shrivel as social aggregates enlarge and the mass of transmitted culture becomes huger and more integrated? As that cockle-shell, the individual soul, leaving the tranquil pool of tribal life, passes first into the sheltered lake of some city community, then into the perilous sea of national life, and at last emerges upon the immense ocean of humanity's life, does it enjoy an ever-widening scope for free movement and self-direction, or does it, too frail to navigate the vaster expanses, become more and more the sport of irresistible waves and currents?

On the one hand it may be urged that, as one rises clear of bodily wants and promptings, one's self-determination contracts, one's life is more and more molded by conceptual rather than impulsive factors; that is to say, by ideas, ideals, beliefs, principles, and the like. The growing preponderance of such factors subjects a man more to his social environment, for these are just the things that are easiest taken on by imitation or stamped in by education. You say the stock of possessions to choose from grows with each generation. True, but nevertheless the incompatible ideas and ideals become fewer, because one of the incompatibles exterminates the other. Consider, moreover, how the diversity in the cultural elements offered one becomes less owing to the march of adaptation. Spelling becomes definite; idiomatic flexible speech falls under the tyranny of grammar and of style. The dictionary expands, but the number of synonyms declines as meanings become more shaded and precise. A religious ferment emancipates souls, but out of it dogmas soon crystallize and close in on the mind. In time unrelated dogmas are compared and sifted, and the complementary ones are erected into an imposing theology, like that of St. Thomas or Calvin, which from foundation to turret-stone offers the believer no option. So from the discussions of jurists emerge general principles which transform a mass of incongruous, even contradictory, customs and statutes into a system of jurisprudence from which inharmonious elements have been expelled and which utterly dominates the ordinary intellect. Likewise unified generalizations about the external world, each trailing off into the unknown with many inviting paths of suggestion, are integrated and the gaps filled in until there exists a body of articulated propositions called a science; and the generalizations of the

various sciences find a still higher synthesis in systems of philosophy.

On the other hand, there is certainly a progressive diversification and enrichment of culture which offers one a greater number of options and permits him to indulge his individual fancy. The great variety of sects seems harbinger of the day when there will be as many creeds as there are believers. Science, of course, being a verified transcript of reality, can be but one; but just as a widening circle of light enlarges the ring of darkness, a growth of the known gives fresh opportunities to speculate about the unknown. The widening scope for the play of individuality is seen in the coexistence in our Occidental culture of a greater number of types of music, styles of painting or architecture, forms of literature, theories of life and conduct. Since these appeal to the needs of diverse temperaments, it is unlikely that the spirit of unification will bring about the triumph of one over the rest or their co-adaptation into one form. The Protestant will not absorb the Catholic, nor the Methodist the Presbyterian. Italian and German opera, lyric and dramatic poetry, realistic fiction and romance, Stoicism and Epicureanism, marriage as sacrament and marriage as contract, the "woman" ideal and the "lady" ideal, will persist side by side because they meet the needs of different people. Just as a developed society partly compensates for the cramping of specialism by offering the individual a greater variety of vocations to select from, so a developed culture affords multifarious opportunities from which each can choose what is congenial to his nature.

The question posed is, to be sure, part of a larger question, namely, What are the influences and conditions that socialize or individualize? St. Simon thinks the life of humanity alternates between "organic" epochs and "critical" epochs. It may be there is no such rhythm in history, but there are certainly upbuilding forces and down-tearing forces, which shift their balance from time to time. It is our business to discover which processes are emancipating and which are limiting; to ascertain what institutions and types of education conduce to self-determination, and how far this is compatible with social unity; to inquire whether it is well to standardize ideas, beliefs, and tastes, or, on the contrary, to encourage variety, nonconformity, even eccentricity, for the sake of having a culture that will provide for every sort of mind its natural aliment.

Leaving now the inter-individual — that is to say, the strictly "social" — division of our science, we come to the special psychology of nationalities and classes, in so far as they are of societal rather than of natural origin.

One of our first tasks is to settle whether national characteristics should be dealt with by social psychology or handed over to ethnology. This depends on whether differences in national traits are due primarily to race-endowment or to situation and history. It is certain that "blood" is not a solvent of every problem in national psychology, and that "race" is no longer a juggler's hat from which you can draw explanations for all manner of moral contrasts and peculiarities. Nowadays no one charges to inborn differences the characteristic contrasts between Englishmen and Russians, between Jews and Christians, between Javanese and Japanese. The marvelous transformation, to-day of Japan, to-morrow perhaps of China and Siam and the Philippines, makes one doubt if even the impassive Oriental is held fast in the net of race. Perhaps the soul-markings of Anglo-Saxons or Slavs or Orientals are of societal origin, due to the capitalization of centuries of experience in unlike situations, and to the injection and saturation of individual minds with these transmitted products by means of social circumpressure. When the Apache youth returned from Hampton, the Hindoo back from Eton, or the Chinaman home from Yale, reverts to ancestral ways, everybody cries "Race!" But why ignore the force of early impressions? If we had caught them as sucklings instead of as adolescents, perhaps there would be no reversion. Why should we expect a few years of schooling to bleach those who have been steeped since their 'teens in a special environment and culture?

The broad moral contrasts between German, Turk, and Gipsy must be due to race or to environment, physical and social. Now, how much weight ought we to assign to the race-factor? For my own part, I doubt if ideas ever get into the blood, or feelings and dispositions that depend on particular ideas. The Chinaman is not born a conservative, the Turk a fatalist, the Hindoo a pessimist, the Semite a monotheist. Notions and beliefs do not become fixed race-characters, nor do the emotions and conduct connected with them become congenital. Yet, considering how differently the peoples have been winnowed and selected by their respective environments, occupations, and histories, I see no reason why there should not arise between them differences in motor and emotional response to stimulus.

Even now in the same stock, nay, even in the same family, we find congenital differences in the strength of the sex-appetite, in the taste for liquor, in the craving for excitement, in *Wanderlust*, in jealousy, in self-control, in capacity for regular labor, in the spirit of enterprise, in the power to postpone gratification — differences which defy eradication by example or instruction. If such diversities declare themselves within a people, why not between peoples? Will not a destructive environment select the sensual, a bountiful

environment the temperate, a niggardly environment the laborious, a capricious environment the forelooking? Will not the restless survive under nomadism, the bold under militancy, the supple under slavery, the calculating in an era of commerce, the thrifty in an epoch of capitalism? Since intellectual gains are indefinitely communicable, men do not survive according to their predisposition to have or not have a certain advantageous idea or belief. But modes of response to stimulus are not so generalized by imitation. Men change their thoughts but not their elementary reactions, and, since according to these reactions they survive or perish, it is possible for motor and emotional differences to arise between peoples one in blood but unlike in social history.

Let the social psychologist account for the cultural differences between peoples and for the moral differences that hinge on some cultural element. Only the simple undecomposable reactions involving no conceptual element, would fall to the race-psychologist. Of course, it is not easy to tell which characteristics are elementary. Once we thought the laziness of the anemic Georgia Cracker came from a wrong ideal of life. Now we charge it to the hook-worm and administer thymol instead of the proverbs of Poor Richard. The Negro is not simply a black Anglo-Saxon deficient in schooling, but a being who in strength of appetites and in power to control them differs considerably from the white man. Many of the alleged differences between Chinese and Occidentals will be wiped out when East and West come to share in a common civilization. But it will be found perhaps that the Occidental's love of excitement, speculation, sport, and fighting flows from his greater restlessness, due to a thousand years less of schooling in industrialism than the Chinese have had. Again, those who imagine that by imparting to Hindoos or Cinghalese our theology, the missionary endows them with our virtues and capacities, certainly fail to appreciate how much these depend on certain elementary motor reactions.

Passing now from the *differentiae* of peoples to the broad psychic differences that appear within a given population, we first set aside as foreign to our purpose the problems that engross the sex-psychologists, the child-study people, the alienists, and the criminalists. The mental varieties they deal with are at bottom anthropic, and their studies are prolongations of individual psychology. In every people, however, there are classes marked by divergent modes of thought and feeling. These class-types of mind are of societal origin, and the delineation and explanation of them belong, I think, to social psychology. Every social population is distributed into a series of unlike subjective environments, their nature depending

largely upon the constitution of the society. Each of these special horizons tends to form men into a class and create a mental type. Hence arise two problems: first, to determine the characteristics proper to each class, recognizing, of course, that in fact these are often blurred and confused by modifying influences coming from other classes; second, to show how these characteristics are generated by the manner of life imposed on that class by its position in the social system. The married and the unmarried lead quite dissimilar lives, and no doubt some day we shall know the nature and causes of the psychic differences between the conjugal and the celibate. Already the disciples of Le Play, after distinguishing the communal family, the individualistic family, and the stem-family, have sought to differentiate the moral types that tend to arise within these several domestic groups. The contrasts of rural and urban types must ever be drawn afresh, for the city and country of our day are not city and country as Aristophanes and Molière knew them.

Occupation is perhaps the chief mold of classes. The familiar distinction of hunting, pastoral, agricultural, and industrial stages of social evolution does not become significant until it is recognized that each of these is not only a mode of production, but also a *life*. The business-man and the farmer differ in their mental processes and a full setting-forth of this contrast would throw much light on revolutions in parties and policies. One of the greatest "finds" in recent sociology resulted from carefully comparing the leisure-class mind with the mind of the productive classes, and the traits developed by industrial employments with those called forth by pecuniary employments. Another nugget turned up by comparing the mentality that prevails in plastic social formations, such as rising cities, colonies, and frontier communities, with that of men in old and crystallized societies. The psychology of the pauper, the prostitute, and the criminal, belonging partly to anthropology, partly to sociology, have afforded a scientific basis for charity and penology.

The systematic survey of class-types ought to be extremely helpful to general sociology. How can we definitively appraise slavery until we know what manner of man the master tends to become, what manner of man the slave? How can we estimate militancy without understanding the mental type created by the addiction to warlike pursuits? Ecclesiasticism and sacerdotalism cannot be judged as to their influence on society until we know the soul of the priest. The genesis of political liberalism is an enigma unless we comprehend the type of mind that forms in cities. Take a problem that now agitates the minds of sociologists — that of class-strife. What arrays class against class? "Interference of interests," says the Marxian; "classes hate and fight each other

because they are interested in incompatible social systems." But it is worth pondering if the strifes of classes are not often aggravated by the fact that the combatants differ in mental type and do not understand each other. The successful conciliation of labor disputes suggests that the feud between capital and labor is partly owing to divergent modes of thought and feeling that grow up among employers on the one hand and workingmen on the other.

In this epoch of democracy and deliquescence, society by no means falls apart into neat segments, as it did two centuries ago. Caste has had its day, and the compartment society, with thick bulkheads of privilege, prejudice, non-intercourse, and non-inter-marriage separating the classes, is well-nigh extinct. To-day the imprint each manner of life tends to leave on those who lead it is continually effaced by such assimilating influences as church, school, press, party, voluntary association, and public opinion. But that imprint must be deciphered if we are to gauge the significance of class ascendencies in backward or bygone societies. We need to know how and why a society dominated by the sacerdotal class — Judea or medieval Rome — differs from Sparta ruled by the warrior class, Venice dominated by the commercial class, Florence dominated by the artisan class, or the Transvaal dominated by the rural class.

SHORT PAPER

PROFESSOR EDWARD CARY HAYES, of Miami University, read a paper before the Section on the study of human experiences and activities as natural phenomena, classifying the phenomenal world into two hemispheres, the physical and the psychic, with a brief discussion of their relations and methods.

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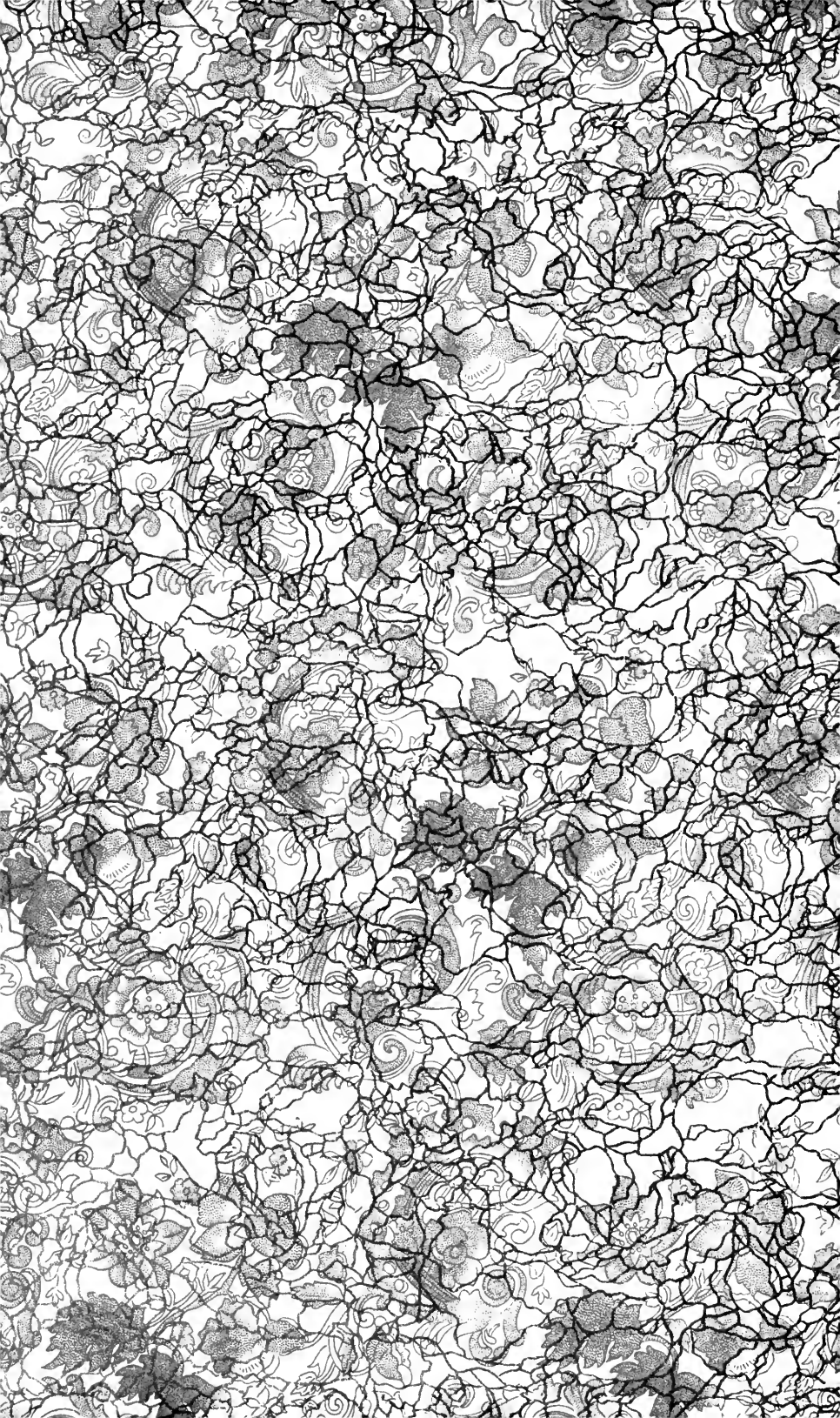
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